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COSSACKS LEAD ADVCE

MOSCOW, January 12, 1943—Led by Cossacks slashing their way triumphantly back into their homeland, the Red Army has rolled the Germans back into the Kuban River region of the Western Caucasus between the mountains and the Don.

Red Star declared that the Kuban region was penetrated after the Caucasian provinces of North Osetia and Kabardino Bakaria had been freed from the Germans in the continuing Russian winter drive.

A communique announced that the Red Army's cavalry had driven 15 miles into the enemy's positions in

DVCE INTO KUBAN AREA

fierce night fighting which followed the capture of six more key towns on the Caucasian front.

The 4th Guards Cossack Corps—the Kuban fighting men who fell back from their towns and villages last summer before the weight of the Nazi offensive—were riding in the vanguard of the Russian forces sweeping back across the steppes.

For the black-caped, high-hatted horsemen of the steppes, and for their townspeople, it was one of the most dramatic homecomings of the war.—Henry C. Cassidy, Associated Press War Correspondent.

COSSACK TACTICS

An anal
ment of the H

IN modern warfare cavalry, especially when used in coördination with other arms of the service, is able to engage successfully, not only enemy infantry armed with automatic weapons, but also motorized units. This has been exemplified time and again by the Cossack Corps of Guards, commanded by Lieutenant General Kirichenko. (See news items, Page 8.)

The German break-through at Rostov in the summer of 1942 and the subsequent capture of Bataisk created a serious threat in the direction of the Kuban River. Had the Germans made immediate use of their numerical superiority in tanks and planes they could easily have reached Krasnodar, for the open ground favored a swift movement. They failed to take advantage of this, however, so a Cossack division was ordered to cross the road that led south from Bataisk and hold up the Germans at all costs. This was done in order to gain time in which to concentrate units of the Cossack Corps then dispersed along a wide front.

First to start out was a regiment under Major Karapetian. It rode both day and night and made only a few short bivouacs in woods and thickets. German reconnaissance planes appeared over the squadrons several times, and in order to confuse the German fliers the Cossacks changed their direction or turned back each time that the fliers appeared. Because the regiment

"Swift maneuvering was made possible by excellent reconnaissance and by skilful direction on the part of the commanding officer."

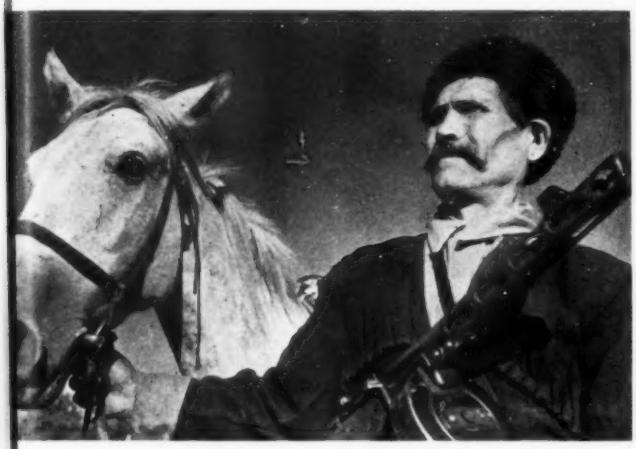
*By cable direct to The CAVALRY JOURNAL from the War Department, U.S.S.R., Moscow.

By Major P. Slesarev, Red Army

ls of the successful tactical employ- l fighting Corps of Cossack Guards.*

moved in a number of groups along parallel roads, the German pilots everywhere reported that the cavalry had retreated southward. As soon as the planes would disappear, however, the Cossacks would again head for the enemy. This deception played no small part in their final success.

At night Red Army scouts reported that the Germans were in a near-by village. In order not to arouse enemy



Sixty year old Cossack Pavel Kamnev of the Krasnodar territory sabered 14 Germans during a single engagement near the village of Kuschovskaya. He has been awarded the Order of Lenin for his valor.

suspicions about the presence of Cossack troops in the vicinity, reconnaissance was carried out by men on foot. After having received the necessary reports, Major Karapetian decided on a night battle, and mounted Cossacks thereupon launched converging attacks on the village. Bewildered by the unexpected appearance of Soviet cavalry, the Germans ran out of their huts and fled in whatever direction they could. The battle lasted for only twenty minutes, but the Cossacks destroyed more than 200 Germans and drove the rest from the village.

This attack is of particular interest because the regiment forced battle *immediately after it arrived, although it had just covered about 120 kilometers.* The decision taken was tactically correct, for the village could not have been approached by surprise in day time, and *without the advantage of surprise* on its side, the regiment would have had *no hope of success.* The well organized enemy fire would have inflicted tremendous losses.

The decision for a night battle in itself, however, was not a complete solution of the problem faced by the regiment, for the enemy first had to be stopped and then held until the Cossack Corps took up advantageous positions for defense. Although the Germans had considerable superiority in numbers and matériel, the Cossacks captured and held the village and the near-by crossroads for four days. To accomplish this the regimental commander *employed active defense tactics.* Some squadrons shifted their positions two and three times a day. They would appear first on one flank, then on the opposite flank. This swift maneuvering was made possible by *excellent reconnaissance* and by skilful direction on the part of the commanding officer.

In some cases cavalry detachments launched flank attacks on motorized columns and cut off the infantry from the tanks. With equal success the *Cossacks cooperated with the artillery* against the German tanks. Whenever a tank attack impended in any one sector a mobile antitank detachment, consisting of a sabre platoon or squadron and several antitank or light field pieces, was immediately transferred to the threatened spot. The Cossacks often *operated on foot* and *placed their horses in concealment* under a heavy guard.

As a rule guns were placed behind natural obstacles —blown-up bridges, marshland, rivers, etc. Dummy positions were constructed somewhat to the side in order to stop the German tanks that drove at them with all of their strength only to find themselves under a heavy flanking fire from the antitank guns. About fifteen German tanks were thus destroyed in one week.

At another time Soviet cavalrymen held the Germans at a village for four days. On that occasion *another Cossack division* came up but did not join in the battle immediately. The *reconnaissance* soon reported that the enemy was regrouping his forces, evidently in preparation for a wide flanking movement. As soon as this became known the corps commander ordered the division to forestall the German maneuver, engage the enemy, and exhaust him with incessant counterattacks and ambushes on all approaches to the main Soviet defense positions. Subsequently, the division was to fall back in such a way that the enemy would find himself faced with fresh attacks after each retirement.

This plan was fulfilled entirely, and for two days the

A Red Army cavalryman rides his horse past an abandoned German tank.

advance guard of the Cossack division battled the enemy. After it had inflicted considerable casualties it fell back to a prearranged line, and when the Germans attempted to inflict a decisive blow on the Cossacks they failed; for during the night a fresh division had replaced the weakened one. The Germans had not noticed their chance, and the next morning they were thrown back with heavy losses.

The second attack ended in like manner. After losing 600 men the Germans gave up further attacks in that sector and the next day transferred their division to our right flank in the hope of finding it undefended, but here, too, they met with stubborn defense. In the course of five days the enemy lost more than 4,000 men killed and gained no material success. A well directed rear guard action forced the Germans, who had not divined the Soviet tactics, to hurl their one untouched infantry division in this sector against our fresh Cossack unit. When they finally learned the *strength of the Cossack troops* they lacked sufficient force to engage them. A lull in fighting allowed for a further concentration of reinforcements.

This rear guard action of a Cossack unit is characterized by mobile tactics. Squadrons constantly strike at the enemy from the flank and from ambush and in this manner inflict heavy casualties. *Because of their high mobility* cavalrymen can cross the line along which enemy motorized columns are moving, and hurl fresh units against exhausted enemy troops.

As evidenced by the above mentioned examples, such tactics enable the Cossacks to exhaust the enemy and work havoc with his plans.

Skilful action on the part of dismounted Cossacks in their employment of mobile detachments, makes fighting against enemy tanks possible. Surprise night raids are one of the methods employed by Cossacks to hinder the regrouping of enemy troops and to cause heavy losses in men and matériel. The blow is usually dealt where it is least expected. Thus a cavalry regiment, breaking through the enemy positions near a certain village, *made a circuit and entered it from the rear*. Panic broke out among the Germans, and all semblance of control immediately disappeared. After they had cut down more than 800 Germans, the Cossacks disappeared just as unexpectedly as they had come. Had the regiment remained in the village longer, the Germans probably would have organized a defense. The Cossack commanders chose not only the correct time and method of attack but selected the tactically favorable moment for retirement.

Still more destructive was a night raid led by First Lieutenant Avsenov in which two squadrons of Cossacks, *strengthened by two field pieces and two mortars*, took part. This detachment made a 20 kilometer march before it attacked the enemy. A column of German motorcyclists emerged from the village just as the Cos-

sacks were approaching it. The Cossack detachment left the road quickly and let the column approach, then opened shrapnel fire at close range. In this case, the artillerymen were right in opening fire only when the whole column stretched out along the road with both its head and tail visible. The gunners were directed to restrict their fire to the highway itself. This precaution proved useful, for after the first few volleys, the Germans fled off the road. Then the Cossacks came into action, cut the Germans down and forced them back up the embankment, where the only way of retreat was covered by mortar fire. The Cossacks then broke into the village, where they were obliged to employ different tactics. They dismounted and drove the Germans out of house after house until they had cleared the whole village.

Meanwhile, the guns and mortars opened fire in the opposite direction at the villages where reconnaissance had reported a large concentration of enemy trucks. This artillery and mortar fire in the Germans' rear tended to increase their demoralization.

At a prearranged signal, the Cossack detachment left the village. Noticing this, the Germans attempted to launch a pursuit by sending a submachine gun company after the Cossacks. The detachment commander had foreseen this development, however, and the Germans were met by fire *from machine guns mounted on horse-drawn vehicles* and were either mowed down or dispersed. Enemy casualties in the battle were considerable. Having brilliantly carried out the night raid, the Cossack detachment returned with little loss.

The success achieved in this operation was effective primarily because of the coördination of the artillery, mortar gunners, and cavalrymen. The commander remained at his observation post from where he controlled his men with the help of light signals and dispatch runners.

It has been found extremely useful to indicate meeting points of advancing subordinate units. As a rule, these meeting points should be outside of the range of machine gun and mortar fire and three to four kilometers from the objective that is being attacked. Troops should make for these meeting points along separate paths, and in case one of these detachments should be pursued by the enemy it should ride off, then break away from the enemy and overtake the main forces.

The route of mounted detachments should be laid out along scarcely populated localities, across fields, thickets, and away from roads. Cavalry will be able to escape pursuers across such terrain, for enemy motorcyclists, armored cars, and tanks are helpless at night in cross-country pursuit.

No position can be held for long, however, by attacks of small groups and night or day cavalry raids. This can

"Then the Cossacks came into action. . . ."

be achieved only by powerful counterthrusts such as those delivered by Cossacks for six days in succession in the area of three particular villages.

Cossack tactics in this case were as follows: Part of the troops dismounted and assumed the defensive along well fortified positions, while several shock Cossack detachments operated along an 80 kilometer front. Whenever the Germans attempted a mass attack, the Cossacks came into the open and charged the attackers from the flank. As soon as the enemy artillery and tanks would come into action the Cossacks would disappear, but these sharp cavalry blows of short duration proved very effective.

Battles near another village are also characteristic of this type of tactics. At extreme range three Soviet armored trains opened fire at a village. Twenty-six minutes later the fire ceased and the Cossacks broke into the settlement and routed the panic stricken enemy. This cavalry charge succeeded largely because of the efficient coördination between the cavalry and the armored trains, and German losses amounted to more than two battalions.

In another sector of the front held by a Cossack corps, the Germans had succeeded in driving two wedges between the divisions and had begun to outflank the corps from the right wing. It was then decided that the Cossacks should seize the initiative, exhaust the enemy both physically and mentally, and then retire to a new defense line. This plan was carried through by means of short but powerful blows at the German infantry positions.

At first the Cossacks counterattacked German submachine gunners and motorized infantry on their right flank. Dismounted cavalry, supported by artillery, destroyed about 400 German officers and men and after improving its positions, made considerable advances in some places. Towards evening the Germans, fearing another blow at their advancing left flank, brought a fresh infantry division into action.

In the morning the Cossacks resumed operations in the same area, while the Germans brought an "SS" regiment into battle. When the fighting on the right flank was at its height two Cossack regiments delivered hard blows at the base of the wedge that had been driven earlier at the junction point between the two Soviet divisions. The skilfully concealed cavalry attack bewildered the Germans, and the Cossacks were able to knock out 1,600 Germans, crush the wedge, and force the remains of the Alpine Brigade back across the river.

The next day frequent Cossack attacks continued to disturb the enemy, and during that night there came a third attack at the second wedge on the left flank. Two Cossack regiments forced the river, charged through two near-by inhabited points and cut down about 800 Germans. Three successive blows forced the Germans to hurl their only remaining fresh division into the battle and thus use up their tactical reserve. The Cossacks thereupon seized the initiative completely and fulfilled their operation orders.

The Cossacks' high degree of mobility and great activity, intended merely to forestall enemy blows, had actually enabled them to rout a strong German force.

General Kirichenko's Cavalry Sweeps Through Caucasus

Moscow, **Jan. 16, 1943.**—Lieut. Gen. Ivan Maslennikov's army, with Gen. Kirichenko's crack Cossack cavalry, advanced 19 miles in the North Caucasus to capture the railroad terminal of Blagodarnoe, whence a rail line runs westward to join the Rostov-Baku railroad at Kropotkin, 135 miles south of Rostov, along with Alexandrovskaya, 30 miles up the Rostov-Baku line from Mineralnye Vody, and six other towns.—HENRY SHAPIRO, United Press Staff Correspondent.

Jan. 16, 1943.—Lieutenant General Nikolai Kirichenko's famous Cossacks of the Guards Divisions are playing a brilliant part in the present operations in the Caucasus.

Advancing in company with armored columns and tank-borne infantry, they are rapidly clearing the Germans from the Caucasian foothills and the Kuban Steppes.

Soviet Cossacks wear the traditional uniforms and carry the traditional sabres, but in addition they are equipped with modern arms—machine guns, grenades, etc. After a wild charge, when they have often broken through tank formations, the Cossacks dismount and fight as infantrymen.—*Soviet Embassy Bulletin.*

Red Army Tanks in Winter

By N. Corotneff

The author, who was a captain in the Russian Imperial Army during the First World War, uses his knowledge of Russian winters as a background for this very fine analysis of present Soviet winter tactics. His instructions in the care and operation of mechanized and armored vehicles under conditions of extreme cold are authoritative and timely.

THE second winter of the Russian-German war will probably furnish considerably more data on the operation of mechanized units in winter warfare than the campaign of 1941-42. During the first winter of Germany's campaign in Russia mechanized warfare came to an abrupt end with the retreat of the German Army from Moscow at the beginning of December and did not come back on any considerable scale until spring. The Russian tank forces participated on a limited scale in several offensive operations—especially in the advance on Ludinovo in January of 1942—but details of these operations are still lacking. Small tank units frequently supported Soviet infantry offensives, particularly when they were storming villages and strong points, but all those operations were purely local and of very limited tactical significance.

As to the German tank formations, they were mostly conspicuous by their absence. There are several reasons for the hibernation of mechanized warfare. There is little doubt that the main reason was the tremendous losses suffered by the mechanized forces of both belligerents. The violent tank battles of the summer and fall of 1941 were sometimes fought on a gigantic scale, and if in the early period of the campaign the Russian tank losses apparently far exceeded the German, the score was more or less evened up during the October and November German offensives, which were stopped at the gates of Moscow. There is conclusive evidence to show that the losses of both powerful tank armies—Guderian's group which operated on the southern flank of the Moscow pincers near Tula, as well as the northern group under General Hoth which advanced on

"When tanks operate with infantry they usually form a separate marching column together with ski detachments. Each tank usually takes on board from three to five skiers."

Klin—both suffered crippling losses in machines and matériel.

To this were added the difficulties experienced by the Germans with their synthetic fuel and lubricants, which proved to be unable to stand the sub-zero temperatures of the Russian winter. As a result, the bulk of the panzer divisions were incapacitated and had to be withdrawn deep into the rear to be re-formed and replenished. The Russians were in no better condition insofar as losses were concerned, but both their machines and personnel naturally proved to be better adapted to winter warfare. For years before the war a great deal of experimental work and hard training were done in the Soviet Army in order to adapt the machines and personnel to the rigorous conditions of the Russian winter.

Before the war it was a considered opinion of the Red Army mechanized experts that tanks could operate successfully under the climatic conditions of central and northern Russia for ten months or more out of the year. The exception was the six to ten weeks at the beginning and at the end of the winter. Especially during the latter period, when the snow blanket loses its firmness and the famous Russian mud comes into its own, difficulties for the mechanized vehicles are sometimes insuperable. It is considered by the Red Army that on a firm, compact snow tanks can operate without any special winter equipment, if the depth of the snow does not exceed eighteen inches. With special equipment, like widened tracks and grousers, tanks can negotiate snowfalls of three and four feet, and sometimes more. A sudden thaw, however, that changes a firm snow blanket into a wet and spongy one, can play havoc with the mechanized units. In the depth of the winter in central and northern Russia such thaws are comparatively rare, and do not last for any length of time.

Practice has provided a set of simple rules for winter operations that cover the main pitfalls of driving over heavy snow. The first and most important rule, which is strictly enforced in the Red Army, is that when tanks are moving in column formation, it is absolutely necessary for each machine to avoid the furrows made in the snow by preceding tanks. Every machine must progress only over virgin snow, and the whole column must assume not a regular file, but a slightly recessed, set-back formation.

Experience amply demonstrated that the quickest way to get stuck in the snow, or, as they say in the Red Army, "to sit down," is to disregard this rule. Also important are a thorough reconnaissance of the terrain and great care in choosing the course. The snowfall is naturally deeper in ravines, valleys, and all depressions of the terrain than it is on flat or elevated stretches.

Depressions should be avoided as much as possible.

"The armored sleigh, without any firing power of its own, is towed by the tank to the forward edge of the enemy's defensive zone. Then the sleighs are unhitched and the infantrymen, supported by the fire of their tanks, dismount and go into action."

"With special equipment like widened tracks and grousers, tanks can negotiate snowfalls of three and four feet, and sometimes more."

The best possible course for a tank is along the elevated portion of the terrain, like hillcrests, plateaus, etc.

Usually straight stretches of terrain that are covered with a deep layer of snow are negotiated at second speed. Tracks should not be stretched too tight, since when they are they do not revolve easily. Extra friction is created and an additional load put on the motor. Shifting of gears should be avoided as much as possible to eliminate the danger of stalling. A tank stalled in the snow is sometimes a tank out of action for good.

Unnecessary turns are also to be avoided. If it is necessary to turn, it should be done smoothly and in a wide arc movement, as a sharp turn may cause the tracks to throw-off.

Experiments were made in the Red Army to reverse the tracks in winter, as many tank officers maintained that it would facilitate movement over snow-bound terrain. This, however, proved to be of little practical value. The reverse tracks made deeper furrows, and tanks frequently stalled. Grousers are a much more efficient solution to the problem. Those used in the Red Army are metal cleats, rounded on the edge, 2½ inches long, and extend through the whole width of the caterpillar. They are fastened by means of welding or autogenous soldering, and each track has five or six of them.

Drifts and snow banks are best negotiated at high speed. For instance, a narrow ravine filled with snow can sometimes be taken in its stride by a fast moving tank at high speed, which practically jumps over it. Drifts and high snow banks are sometimes "broken through." In this case the machine is put in reverse and backed up twenty to thirty feet to gather more momentum for the impact.

Marshes and swamps are always treacherous when the snowfall is deep. Solidly frozen marshes under the warming layer of a thick snow blanket begin to ferment and defreeze. In northern parts of Russia, and especially on the Finnish Front, the tanks often got into great difficulties while trying to negotiate supposedly solidly frozen marshes.

Another difficulty peculiar to winter warfare is presented by heavily wooded sections. Moving through woods and forests, the tanks are handicapped by the snow that constantly falls off the branches on the periscopes and portholes, and completely obscures the vision. This makes it necessary to stop the machines frequently in order to permit the crews to get out and clear off the snow. In the dead of winter, when a thick layer of snow covers every branch, the machines sometimes have to be stopped every five or ten minutes. The experience of the Russo-Finnish War of 1940, as well as the German Campaign of 1941, helped to work out an effective countermeasure. In such cases the artillery comes to the assistance of the tanks and, with several rounds of shrapnel, shells the wooded sections through which they will have to pass and shakes the snow off the branches most effectively.*

An operation that requires careful planning is the crossing of a frozen water course. This necessitates, first of all, a most careful and detailed reconnaissance. The tactical reconnaissance, carried out by the mechanized units themselves, sometimes supplemented by skiers, must determine the disposition of the enemy forces in the vicinity of the crossing, the approaches to it, the character of the terrain—which naturally governs

*NOTE: Contrary to the practice of most of the armies, which have virtually eliminated shrapnel shells in favor of H. E.'s, the Red Army considers that shrapnel still has its uses. The same procedure as described above also is used to "comb out" a wooded section from enemy snipers posted in the tree tops.

the choice of the concentration area—and the concealment measures necessary. Additional reconnaissance, carried on by engineering troops, gives the exact topographical data of the banks of the river, the steepness of the slopes leading to the ice, the thickness and condition of the ice itself, and the width and depth of the river.

The thickness of the ice is measured by a special meter. This instrument is a slender steel rod, and when it is driven through the ice, an automatic device on top of it shows the thickness of the ice layer. Not all of the Red Army mechanized units, however, are equipped with it, and in its absence, a wooden rule is used. This requires the making of ice holes, which should be made as small in size as possible and should be done very carefully in order not to weaken the ice. If the thickness of the ice is not less than fifteen to twenty inches and the river is comparatively shallow, light tanks, keeping distances of forty to fifty yards, can cross safely in column formation. When the ice layer is less thick, it is safer for each tank to choose a separate course.

If two crossings are taking place simultaneously, and not more than one hundred and fifty or two hundred yards apart, it is advisable to strengthen the ice, as experience has shown that a simultaneous pressure on the ice within such a sector can produce cracks and fissures. To strengthen it, specially made wooden shields are laid out across the whole width of the river. If shields are not available, mats are made with straw or brush, and repeatedly watered until they are transformed into squares of ice eight to ten inches thick. A squad of sappers using hand operated pumps can prepare enough mats in two and a half hours to cover a crossing seventy to eighty yards wide. The ice must be cleared of snow before the mats are laid out.

Another way of strengthening the ice is to pour water right over it, but this is much more lengthy and involves more labor. In this case the area necessary for the crossing is cleared of snow, and a snow parapet several inches wide is made around it to dam the water within the bounds necessary for crossing.

Camouflage is especially important during crossings. The crews and engineers must wear parkas. Machines and equipment used in the crossing are carefully camouflaged with white cloth, and a thin layer of snow is spread over the fabric. Spades and tools used by engineers are painted white. The crossing itself is preferably undertaken at night. In daylight crossings smoke screens are frequently used. In the latter case care should be exercised in accomplishing it in such a manner as not to create confusion in tank columns by blinding the crews with an excessive amount of smoke. The crossing itself is made under the supervision of special traffic squads, who post men at the approaches, direct the tanks, maintain order, and look after necessary precautions. In very cold weather all sounds are amplified, and carried much farther. It is important therefore to avoid all unnecessary sounds. Commands are issued in the lowest tones possible.

During periods of rest or inactivity, care is taken to preserve the machines as well as the crews from undue exposure. Frequently, if the situation is such that a mechanized unit does not expect to be moved for five days or more, the tanks are buried in the ground approximately up to the base of the turret. Between caterpillars, trenches four to five feet deep are dug. A portable iron stove is placed under the motor housing, or, in the absence of such, a brick stove is constructed. The fire is kept going constantly, and thus frequent idling of motors becomes unnecessary. It is sufficient to run the motor three or four times a day for a few moments, in order to insure an easy start. This procedure not only saves a large amount of fuel, but also provides a warm shelter for the crews. The tanks are covered with paulins and camouflaged with snow. If the situation, on the other hand, is such that the unit may be moved at any time, this procedure is naturally out of the question; although paulins are used, portable stoves are placed near the motor, and the crew can rest under the paulin. Care is taken not to cover up the exhaust, as this creates danger of carbon monoxide poisoning for the resting crew members.

Winter conditions also affect, to a certain extent, the tactics of mechanized units. A rough terrain covered with a deep layer of snow necessitates a careful and elaborate reconnaissance of snow filled ravines and depressions, and generally militates against the use of tanks in large formations. This frequently limits their activity to infantry support. When tanks operate with infantry, they usually form a separate marching column together with ski detachments. Each tank usually takes on board from three to five skiers. A tank battalion thus carries approximately a company of ski troops. When the formation goes through a difficult or little known terrain, the skiers carry on a continuous reconnaissance in an effort to locate the dangerous spots ahead. The tank commanders keep a careful data of the character of the terrain, the depth and the consistency of the snow, the number and character of drifts and snowbanks, etc.; and this data is relayed to Headquarters.

Another winter feature of the Soviet mechanized tactics is the use of armored sleighs, which were first tried out in the Finnish War. They proved to be conspicuously successful, and by the end of the Finnish Campaign the sleighs were used quite widely. Their purpose is to provide protection for the infantry operating with the tanks. It is an armored carrier, without any firing power of its own. The sleigh, with six or seven infantrymen in it, is towed by the tank to the forward edge of the enemy's defensive zone, where the sleighs are unhitched, and the infantrymen, supported by the fire of their tanks, dismount and go into action. When storming strong points this procedure proved to be of definite value and considerably decreased the casualties of the infantry during the initial stage of the attack.

If mechanized units are sometimes severely handi-

capped by cold, on the other hand, the slowing down of motor vehicles on snow and icebound ground offers new opportunities to aggressive tank commanders. Motorized artillery, for instance, being heavily handicapped on snowbound terrain and tied to the roads, becomes a much easier prey for tanks than under ordinary conditions.

Generally, one must remember that Russian mechanized tactics were always more conservative than those of the Germans, and up to the beginning of the war were fashioned along those of the French Army. According to Field Service Regulations of 1936, which still remained valid at the beginning of the war, Red Army mechanized units are divided tactically into two categories: tanks of *distant action,* which constitute independent formations; and tanks of *infantry support,* which are assigned to rifle divisions and regiments. Although the exact figures are not known, it is reasonable to assume that at least half of the Soviet tanks, at the beginning of the war, were in the latter category. Therefore, the limitation in the use of large independent tank formations, which the winter enforces, did not affect the Russians' tactics as much as they did the Germans', whose tank strength in the early stages of the war was concentrated almost exclusively in panzer divisions. Only at the very end of the 1941 campaign did the German command begin to show a tendency to break up large tank formations, and in many instances scatter them among infantry units. The Russian winter was one of the causes for this tactical change.

Shaposhnikov and Soviet Strategy

". . . Finally, in the winter of 1942-43, with the help of the Allies in the west, the great offensive against the Reich would begin."

IF the Russians, aided by the thaws, do succeed in thwarting Hitler's plans, whatever they are, and can keep the initiative into next summer, (1942) their war would probably be won. The chances of their doing so are very small. But if they do the next-to-impossible, it will be thanks . . . mostly to the stratagems of Boris Shaposhnikov, the brain of the (Red) Army. . . .

While credit for tactical successes, or blame for reverses, must fall to such regional commanders as Timoshenko, Zhukov, Budenny and Voroshilov, there is only one man who can make the huge strategic decisions on which the war will be won or lost. That is Joseph Stalin. Joseph Stalin never makes a military decision without asking Boris Shaposhnikov what he would do. . . .

Marshal Shaposhnikov has studied winter warfare. He knows what an army can do, and what it cannot do, when snow piles above hub caps.

He knows that bitter winter warfare is old-fashioned warfare, in which man is more important than his machines. He understands winter camouflage. He realizes that in winter cavalry and infantry can accomplish more than planes and tanks. And yet at the proper times he uses planes mounted on skis and tanks painted white. He knows how important the warmth and cleanliness of his men is in the season when frostbite and typhus march with soldiers. He knows that in winter warfare Death takes the hindmost. . . .

Boris Shaposhnikov is probably not over-sanguine about the spring (1942). He would put a little salt on . . . talks of *never* giving the initiative back to the Germans. Marshal Shaposhnikov may have the initiative taken away from him in spite of his efforts to press his advantage. But even if he does lose it, he thinks he can get it back again and eventually win the war, by some such formula as this:

In the spring and summer of 1942, Leningrad would probably be tightly sealed again. Moscow would be attacked, but could hold. The Germans would make their greatest push in the south, would drive the Russians back to the Don River. There the Russians would try to stand, then in the autumn begin a counter-offensive. By that time, if Britain has succeeded in holding Suez and the Middle East, the Germans would be short of oil, men and morale. Finally, in the winter of 1942-43, with the help of the Allies in the west, the great offensive against the Reich would begin.—Reprinted from *Time,* issue of February 16, 1942.

TANK OPERATIONS

In the Enemy Rear

The following operation was carried out in the beginning of the great Soviet 1942-43 offensive. These tactics resulted in the encirclement of German troops at Stalingrad and ended in the capture of Kalach.

By Tank Major General A. Rodin, Red Army

THE Soviet tanks were to penetrate deep into the enemy's rear, some 200-300 kilometers away from the main troops and supply bases. There could be no question of relaying war supplies, fuel and food in the enemy rear. Every detail had to be planned.

The first day of the raid, the tanks were scheduled to cover more than 60 kilometers over ground outside the roads. Daybreak brought the artillery preparation which came as a surprise to the enemy. Before the Soviet offensive began the enemy did not succeed in spotting the Soviet group despite constant and careful air reconnaissance. A thick fog veiled the terrain and obscured visibility beyond 200-300 meters.

The tanks entered into battle beyond the first line of German trenches and barbed wire obstacles. Only on the second defense line did the Germans make an attempt to repulse the attack. *The tanks entered the battle straight from the march,* crushed the German resistance, and moving with increasing speed passed over the second defense line.

Movement over the broken ground of the steppe required much time. Day faded into twilight and darkness set in, but the tanks continued to press forward. Headlights were switched on. *Using their compass,* the tankmen "sailed" the blizzard swept steppe. The strong wind swept up snow which covered the visors and windshields of the trucks. Now and again men had to halt and check their bearings.

Finally, the tanks reached a state farm, the first landmark. The enemy was no longer there. He had fled, and his stores which he had left on fire served as a lighting tower for the Soviet columns.

The tanks pressed forward. Enemy artillery opened fire somewhere to the right, and the tanks switched off their lights. Darkness and the snow obscured everything, but the tanks moved on.

After two more hours, they stopped for refueling. The auxiliary vehicles kept pace with them. Some tanks appeared on the left, headed towards the rear. Scouts were detailed, and the column continued on its march. En route, it received a report that the tanks on the left were enemy tanks moving towards the Soviet rear. All the better—they would now be cut off without any retreat open to them.

Attacking straight from the march at daybreak, the Soviet tankmen captured inhabited points Novotsaritsynsky, Valamovsky, Perelazovsky, and later also Yefremovsky. At Perelazovsky, where the German Corps Headquarters was situated, the enemy offered stiff resistance. But with a sweeping blow straight from the march that enveloped the enemy ranks with motorized infantry, the Soviet troops quickly captured Perelazovsky.

The sudden appearance of Soviet tanks deep in the German rear had a tremendous effect. The enemy fled in panic. The Hitlerites had time to set only one food supply store on fire. The remaining German stores and offices remained intact.

★By Cable to The CAVALRY JOURNAL through I.C.N.

In the houses the Red Army men found abandoned staff documents, officers' coats, etc. Trucks with poultry and pork were abandoned on the streets while at Perelazovsky the enemy fuel dumps were captured. The Soviet tanks refueled with German gasoline.

An amusing incident occurred at Novotsaritsynsky. A group of Soviet commanders were standing in the street when a German automobile came dashing up at top speed. They stopped it and the passengers reluctantly came out of the car. Among them was a staff officer of the German Army Corps.

During a brief halt the tankmen summed up the first results of the raid. The enemy had suffered heavily, and retreat had been cut off for the remnants of two enemy infantry divisions. After two futile night counterattacks, the enemy retreated with heavy losses.

Meantime, the advanced Soviet detachments occupied two more enemy support points. In the morning the march was resumed towards Kalach. The thirty to forty kilometer stretch of road was littered with trophies. Groups of war prisoners, 300-400 each, were encountered en route.

By evening, the tankmen paused in the village of Ostrov for refueling. The scouts reported that 200 kilometers from Ostrov in the direction of the Don was the enemy defense zone.

This meant battle, but the tankmen were in no hurry to become entangled. With the aid of the local inhabitants they learned important information about the enemy forces in Kalach. To all appearances there were no less than a thousand German soldiers in the town and much artillery. There was a good crossing built by the Germans across the Don, strong enough for tanks to get across, and German machines crossed the bridge with their lights on.

At 5 AM our trucks and tanks moved towards the Don. On the hill beyond the village, headlights were switched on. This could mislead the enemy. Half an hour later our main forces began to move towards the Don.

A battle ensued near the enemy's fortified zone. The enemy defenses abounded in fire-points and dug-in tanks. Under cover of a barrage, the tankmen probed for the enemy flanks. The fighting continued with increasing force. Kalach was within a stone's throw, but if the Germans blew up the crossing, the town could not be reached. The ice on the Don was too thin to enable the heavy machines to cross.

Another tank unit started to envelop the enemy from the right. The Germans wavered, began to retreat, and later took to flight southeast. At 5 PM news came that the crossing had been preserved for the Soviet tanks. The strategem had worked brilliantly.

Moving on captured German trucks, Filippov's detachment freely crossed the enemy defense line as well as the bridge across the Don. Thereupon the tommy gunners jumped from the trucks, removed the German guard and prevented them from blowing up the important, strategic crossing which was already mined.

For sixteen hours sixty Soviet tommy gunners and five tanks defended the bridge across the Don while they fought the enemy as he advanced from Kalach and retreated toward the bridge. By the end of the day another tank unit reached the bridge and together they struck a blow at Kalach. This was the third night of the offensive and almost three full days of raid in the enemy rear. Dispatches were constantly received from the units.

The tankmen crossed to the left bank of the Don two kilometers from Kalach, and there was fighting at the approaches of the town. The fighting lasted all night and tense preparations were in progress for the capture of Kalach.

Early in the morning, tankmen under the command of Filippov and Filipenko made a thrust for the city. At 10 AM fighting was already in progress on the western outskirts of Kalach. On the eastern outskirts, the Hitlerites still held their positions. The motorized rifle battalion, detailed to dislodge them, crossed the Don over the ice and broke the enemy's resistance. The surviving Germans fled along the road to Stalingrad with the Soviet tanks on their heels.

The raid was merely the beginning of operations undertaken and accomplished in accordance with the strategic plan of the Supreme Command of the Red Army.

As seen from the inside of one of the tanks, the Red Army armored units pierce deep in the rear of the German front lines in a sector northwest of Stalingrad. A German shell has burst in front of one of the tanks. (Dec. 12, 1942.)

AN ARMORED TRAIN
In Defensive Action*

By Captain V. Morozov, Red Army

THE units of one Soviet rifle division, while maintaining a mobile defense on an open plain, had neither time nor available forces to intrench effectively. They were ordered, therefore, to hold the enemy by short counterattacks and, in the event that they were threatened with encirclement, to retire to the next defense line.

In many places the enemy's automatic riflemen, taking advantage of the natural cover offered by the terrain, managed to infiltrate into Soviet positions. German infantry, under cover of their artillery and trench-mortars, massed in a ravine and then launched a heavy attack. The advanced Soviet rifle units were obliged to retire, but according to an agreed plan, as they retired, the enemy was lured along the railroad track.

Despite heavy losses the Germans, encouraged by their initial success, stubbornly pressed forward, but to their surprise, affairs suddenly took a different turn. By a sudden dash a Soviet armored train broke through the zone of the enemy's gun and mortar fire, and after successfully negotiating the gap of 20 centimeters in the rails, plunged into the thick of the enemy's infantry, and cut broad swathes in the German ranks. Simultaneously, the Soviet infantry launched a counterattack and struck at the flanks of advancing enemy troops. German artillery did not dare open fire at the armored train for fear of injuring their own infantry.

Had the defense been of a passive character, the armored train might have limited itself to a firing position, but in that case the Germans' numerical superiority might have weighed the scales in their favor.

After careful reconnaissance had made it clear that the Germans were massing large forces for an offensive in a village not far from the railroad, a plan of action was worked out jointly by the armored train commander and the commander of the rifle division. The whole plan was based on a sudden short surprise blow by the armored train. The infantry was assigned the task of inducing the enemy to move his main forces along the railroad track. Then, after smartly breaking contact with him, they were to re-form their ranks and strike at his flank. Success depended on the speed of action of the armored train which was to advance rapidly for two or three kilometers ahead of the Soviet infantry, break into the enemy's battle order, and take advantage of the fact that in mobile fighting on open ground the enemy would be unable to bring up his light artillery in time or to mask it unperceived.

The element of surprise was insured by the fact that until the moment of action the armored train was in concealment, and its presence was unsuspected by the enemy. The bold and decisive action of the armored train was insured by careful preparatory measures.

Reconnaissance observation and protection of the railroad track was intrusted to infantry posses, which had preliminarily advanced well ahead and effectively concealed themselves. The most advanced posse was

*By cable direct to The CAVALRY JOURNAL from the War Department, USSR.

Each armored train is equipped with powerful antiaircraft guns. Here Red Army soldiers search the sky for enemy planes.

A Soviet armored train, camouflaged for winter operations, sets out on a mission.

equipped with a telephone and all the while supplied valuable information on the enemy's movements.

A few hours before dawn several breaks in the railroad track in the vicinity of the enemy (unperceived by him) were repaired with rails prepared beforehand. In the event of breaks in the track during the course of battle, wooden bars were made ready, for experience had shown that such wooden bars can be used for temporary repair of gaps of up to 30 centimeters.

Reliable communication, prior to the attack, between the armored train commander stationed at the infantry observation post and his train, was insured by double telephone lines, from signals, and motorcyclists. All of these precautions, taken beforehand, contributed to the successful action of the infantry and the armored train and made it possible to carry out "pocket tactics," to which the Germans, much to their surprise, fell victims.

Let us relate another episode—the battle for an inhabited place. Because of the character of the ground, the railroad track was not visible for a long distance, and there was a real danger of it being damaged by enemy demolition parties while the armored train was in action. To prevent this, the armored train entered the battle and from the very outset patrolled Soviet positions. The enemy's guns were unable to prevent its movement, as they were forced to confine themselves to the zone of fire.

The armored train's purpose was to retard the attacking enemy, destroy his groups of automatic riflemen near the railroad, prevent him from bringing up reserves, and to cover the Soviet positions.

Endeavoring to probe the weak points in the Soviet defense, the enemy, with the idea of striking in the flanks, began slowly to envelop the railroad track. Thanks to his numerical superiority he was to some extent successful in this, but not for long.

Covered by the armored train, the Soviet infantry parried the enemy's flanking movement and caught him in a pincer movement instead. While the infantry reformed their ranks and attacked the advancing Germans in the flank, the armored train moved on ahead, and with its guns and machine guns mowed down their reserves as they were coming into action. The enemy wavered and began to retire in groups. The armored train's advance was impeded by a broken ridge. Therefore, a party of automatic riflemen descended from the train and advanced pointblank ahead at the enemy.

In carrying out "pocket tactics," when the railroad track is visible for only a short distance, coördinated action between the train and the infantry, and reliable contact between them by means of dispatch riders and signals, is of prime importance.

No less important is it to ascertain the exact moment when the locality around the armored train is clear of one's own troops and occupied by the enemy so that the train may open devastating fire without risk of hitting its own infantry. The proper moment for one's own infantry to attack must likewise be determined.

In order to guard the track the armored train should be assigned a company of infantry which should scatter along the track, keep watch on it and its environs, and serve simultaneously as liaison between the train and the infantry. The armored train should carry raiding parties which, in the event that the track is seriously damaged, should descend from the train and go into action if the enemy begins to waver. These raiding parties will be able to advance under cover of the train's guns and destroy the retreating enemy from the rear with impunity.

When carrying out "pocket tactics," in case of mobile defense it is important that one's own infantry should not concentrate around the train in order to secure protection of its fire. This is dangerous both to the infantry and to the train if the enemy's guns should bombard the train and the track. Furthermore, the armored train, by its tactical character, is best suited for bold, audacious, but short blows and must, therefore, retain its mobility at all costs; and the infantry may hamper its movements.

The purpose of the infantry in such cases is to lure the enemy within reach of the armored train, then break contact with him, regroup, and suddenly attack him in the flank while he is under the devastating fire of the armored train. That is the essence of "pocket tactics" or effective coördination between armored train and infantry.

Captured German antitank guns at a salvage center near Tikhvin. The gun in the right foreground is a 50mm model and is missing a wheel at the rear of the trail. Snow conceals characteristics of some of the other pieces.

This damaged 210mm howitzer, discarded on the Klin highroad by the retreating Germans, has a range of more than 10 miles and fires a 264 pound shell. It is part of the German GHQ artillery.

Captured German Matériel

Russian Front

Bogged down in the mud is this captured 150mm heavy infantry gun. Gunners' shield is torn away and other parts are damaged. This is probably not of German manufacture, possibly a Hungarian piece. In the right background is the standard German 150mm howitzer.

A Krupp Antitank Gun

This 37mm antitank gun was captured by the Red Army near Tikhvin. Thickness of the gun's tube shows that this product of the famous German arms manufacturer is of the high velocity type which the Germans have found so effective. The sloping shield deflects enemy bullets.

This German 88mm dual-purpose gun, captured by the Russians during their winter drive, is of the type that has been used effectively both in Africa and on the Russian front. It was also used in 1940 to smash the bunkers of the Maginot Line. Note the elevating and traversing mechanism which makes it both an antitank and antiaircraft gun.

The German 50mm antitank gun, pictured below, is known as the Pak 38. Ammunition for it lies in front; the flag placed on the shield indicates a lower echelon command post. Note the muzzle brake.

ARMORED INFANTRY
In Armored Operations

*By Colonel James C. Crockett, G.S.C.**

THE application of a purely historic, as opposed to a dynamic, analysis of military operations, principles and tactics is the greatest danger confronting a staff charged with operational planning. Journalists and commentators add to this danger by giving wide publicity to fixed ideas based on past application of military principles.

For instance, the principle of total war has been widely publicized. The ideas as to the application of this principle have become fixed. To a majority of people—both civil and military—total war has come to mean the particular type of war initiated in 1939 by the Germans.

Total war as conducted by the Germans merely represents their maximum effort with the means available. The form which this war has taken depends entirely upon their resources.

Most of the German concepts brought into play in their conduct of total war have been based on their particular situation—on their military potential. This is strikingly shown in the development of their armored operations. The German armored vehicle production potential was strictly limited; therefore, although their armored operations have been highly successful, the size and use of their armored force have been quite limited. In the light of the success of German armored operations, it seems reasonable to believe that had they had an unlimited armored vehicle production potential, their armored operations would have been far more extensive.

In drawing conclusions as to our armored needs or uses, we should guard against a historic analysis of European armored operations. Analyzing and applying the lessons of the present war we should carefully consider our almost unlimited potential for armored operations.

In the realm of tactics and organization, the fixing of ideas based on past performances rather than on future plans and needs is widespread.

Let us consider a few examples which will illustrate the meaning of the above statements.

*A. C. of S., G-2, The Armored Force—former Asst. Military Attaché, Berlin, 1933-1937.

Perched on a Red army tank, this Soviet infantry unit is being carried to the front for an attack against the Germans.

A detachment of Soviet tank-borne infantry breaks through the enemy lines and dismounts for action.

The armored division was organized as a balanced force of the combined arms, including tanks, for use as a powerful offensive unit. The strength of the armored division is its tank units used as a concentrated striking force. *This striking force must be given the support of all the other arms and services of the armored division.* The infantry, the artillery, the attached air, the engineers are combined in their support of the attacking tanks.

The infantry component of our armored division is called armored infantry. Our armored infantry is transported in armored half-track vehicles—hence its name. In some foreign armies the infantry component of the armored division is transported in armored vehicles; in other foreign armored divisions the infantry is transported in trucks. Whatever the means of transport, the necessity for the immediate and close support of the tank component is a characteristic of armored operations. *Where this infantry support lags or is absent, the tank operations are only partially successful or fail entirely.*

The success of armored operations depends largely upon the *combined operations* of all units of the armored division.

The components of the armored division are so proportioned and harmonized that detaching individual units ruins the fitness of the division for employment.

Similarly the components of the larger armored formations, such as the armored corps, must be so proportioned that the operations of the component armored divisions can be immediately supported by other ground components, such as armored infantry divisions having the same potential tempo as the armored divisions.

The initial success of the armored divisions was, as we all know, very great. In the Battle of France, the armored divisions, with their assaulting tanks ran roughshod over other ground units. Much of this success was, of course, due to the weakness or entire absence of antitank tactics and weapons. But this very weakness of antitank defenses must be largely charged to the application of a historic analysis in the studies of tank operations of World War I.

Since the Battle of France, there has been a large increase in the number and effectiveness of antitank weapons and some development of antitank tactics. During the past year, the tank attack has frequently been brought to a halt by the isolation of the tanks from their supporting units of the armored division. In each case where this isolation has been achieved, the attack of the armored division has been brought to a halt, and in many cases the attacking tanks have been destroyed. The isolated tanks have often been destroyed by defensive infantry employing their various organic weapons. A historic analysis of these operations might say that the value of the tank is declining, and that the proportion of foot infantry must, therefore, be increased. In fact some armies have already decreased the tank striking power of their armored divisions, and have tied tank units to the foot soldier by making the tank units an organic part of the infantry divisions.

A dynamic analysis of these operations certainly calls for a solution of these organic and tactical problems

which does not turn back the clock hands to those massed slaughters of infantry known historically as Passchendaele and the Somme.

The tank was originally invented to get the attack forward through the deadly defensive machine gun fire which caused the attacking infantry such appalling losses. At the time the British introduced the tank, the French were working on an armored infantry carrier which was designed to carry the infantry quickly through the zone of small arm and machine gun fire. These vehicles were mothered by necessity.

Today the increased antitank defenses have brought us to a decisive crossroads. We can either lessen the emphasis on armored operations which have been so successful when governed by sound tactical principles and *properly supported by air,* or we can search for and devise new organization, tactics and equipment for the units supporting the tanks, and thereby maintain the powerful advantage of mobility which armored operations offer.

Armored infantry, which possesses great mobility and has the ability to fight either mounted in armored carriers or on foot, might solve many of the difficult problems that now confront those military men who see in the maintenance of battlefield mobility our greatest opportunity for success and our greatest insurance against the heavy losses of the stabilized positional warfare of World War I.

Both the Russians and the Germans appear to be turning to the latter solution. Both these armies within the past year have introduced new types of infantry organizations to give close and highly mobile support to the tanks in armored operations. The Russians call their tank infantry *Tank Desyanti.*

The Germans have organized a special arm (*Waffengattung*) and given it the name Armored Grenadiers (*Panzergrenadieren*).

A translation of both the Russian and the German names given to their armored infantry carries an implication of troops who fight mounted or dismounted.

Here it may be interesting to quote from the present German regulations pertaining to armored infantry. (September 25, 1942.)

"The strength of armored infantry lies in its speed and cross-country performance, the possession of *numerous* automatic weapons and of protective armor.

"Armored vehicles enable the armored infantry to overcome comparatively weak opposition without dismounting.

"Rapid alternation between fighting from armored carrier and fighting on foot, and the combination of these two forms of fighting are characteristic of armored infantry.

"The chief task of armored infantry is close coöperation with tanks. By following up closely, they can quickly exploit the tanks' success.

"Armored infantry, on account of their speed and maneuverability, can readily adapt their fire to suit any situation. Fire superiority so gained can be exploited more rapidly in armored vehicles than on foot.

"The splinter-proof armor of their transport vehicles allows armored infantry to follow closely behind the burst of their own artillery fire."

In our army, armored infantry is found only as an organic part of our armored division. This armored infantry is trained to support closely the tank operations—sometimes preparing the way for tank attack, sometimes forming the defensive shelter behind which the tanks reorganize. Always this armored infantry must be prepared to operate for periods alone and unsupported, deep in the enemies' position.

The armored infantry supports the tank assault which forms the spearhead of armored operations. To give this support the armored infantry must be as mobile as the tank units, yet it must have the various weapons, light and heavy, and the other auxiliary means to establish and maintain itself defensively.

The real meaning of armored infantry, however, lies in the *armor and speed* afforded by its armored cross-country vehicles. In these armored vehicles, safe from enemy infantry small arms fire and from lateral shell fragments, the armored infantry must remain and fight as long as possible. If the mission or the enemy situation forbids the employment of the armored carrier, the infantry dismounts and fights on foot.

The fight from the vehicle and the fight on foot and the combination of both are the criteria for armored infantry. Their main mission is to take advantage of their mobile and abundant fire power and to put it into effect in combined action with the attacking tanks.

Often the armored infantry units have to create the prerequisites for the tank assault and must precede this assault. Such tasks are, for instance, attack across a stream barrier, across terrain cuts, against enemy strong points located on tank proof terrain, attack against pill boxes or bunkers, attack against villages and woods, and attack at night and in fog. The most characteristic mission is surprise attack to broaden the success of the tanks.

The tactical possibilities for the armored infantry are of great variety.

Summary and Question

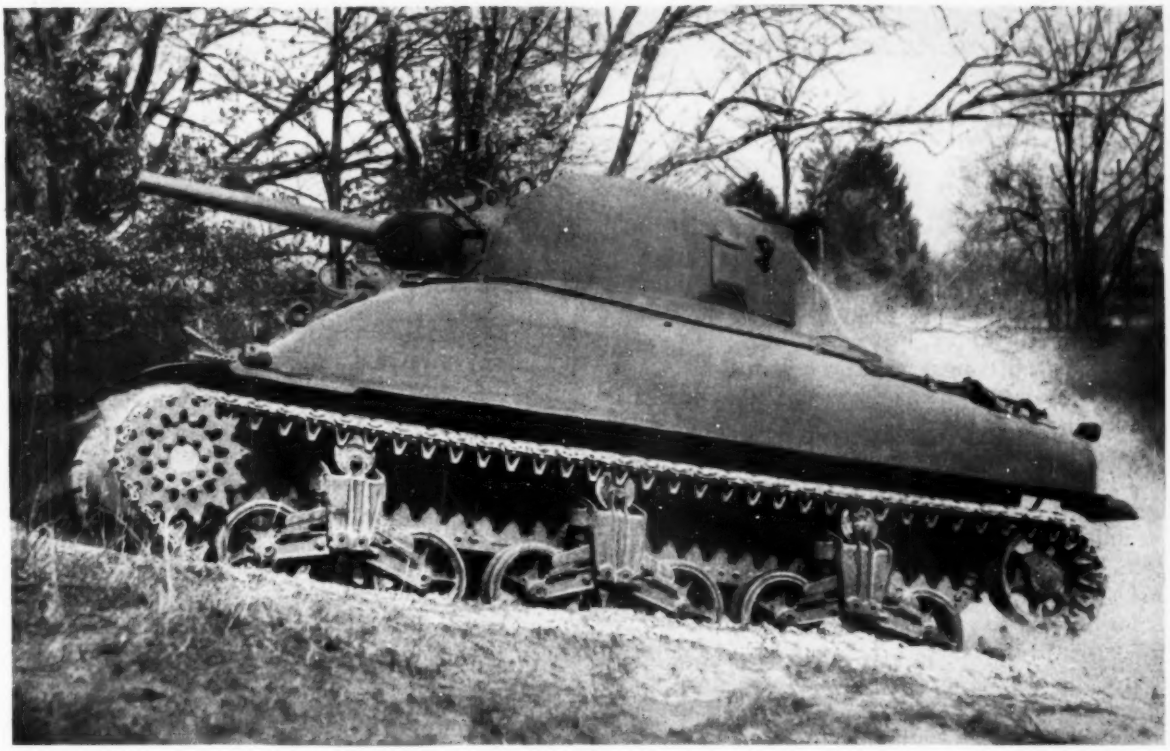
Armored divisions have great firepower and mobility.

Armored divisions grouped in large armored formations have been uniformly successful when properly supported by other ground and air units. This support must have at least the same mobility and tempo as the armored divisions.

Armored vehicles give their occupants considerable protection against enemy fire and have great battlefield mobility.

We have the greatest armored vehicle production potential. Why not study the possibilities of armored infantry divisions as possible supporting elements for large operations of armored formations?

The U. S. Medium Tank, M4*



These official U. S. Army photos show the 30-ton medium tank, M4, during tests by the Armored Force Board. The new vehicle differs from the M3 model in that it has an all-cast instead of riveted body giving it a lower silhouette and smoother contours; its 75mm gun is mounted in the turret with 360-degree traverse; it has several machine guns but no 37mm gun.

*Courtesy, *Army Ordnance*.

Fuel Bottles As Tank Destroyers*

Condensed from An Article by Major M, Protsenko, Red Army

IN addition to artillery, aviation, and tanks, the Red Army has found a very valuable means of combating German tanks in the "tank destroyer." This term is applied to individual soldiers or groups especially trained in the destruction of tanks by means of fuel bottles. Literally hundreds of German tanks have been destroyed by this means, and cases are on record of individuals who have reached a score of thirty to forty tanks in three months of battles.

A very effective organization consists of three men. Two of the crew are bottle throwers, and the senior is armed with a tommy gun. After receiving a mission to destroy tanks on a probable approach, the group proceeds to the designated spot, and the senior disposes his men. They dig individual trenches, each capable of containing a couple of men and completely camouflaged. Having prepared their positions, each man then carries out a dry run on objects ten to twenty yards distant in order to adjust their fire. The trio act on a predetermined signal, and when the German tank has reached the approved spot the throwers toss their bottles. As the occupants of the tank emerge the man armed with the tommy gun picks them off.

The primary consideration in the selection of a position is to choose a place where the approaching tanks must slow down to negotiate an obstacle. Favorable positions can always be located near bridges, antitank trenches, escarpments, roads, in forests and on marshy terrain.

Coördinated groups of three can be scattered checkerboard fashion about twenty-five to thirty yards apart in accord with the requirements of the situation. Groups are especially useful along a road that is being negotiated by mortar columns. Here camouflage is most essential, as the head of the column is allowed to proceed to the end of the ambush, and upon signal a simultaneous attack is launched. After the attack the groups return immediately to an assembly point.

When friendly troops are on the march tank destroyers are placed in the column and ordered to be alert for possible attacks. Upon meeting enemy tanks they immediately take up positions utilizing any cover at hand.

Tank destroyers are also placed well ahead of advancing friendly motor columns in areas known to be favorable to tank movements by the enemy. When the column passes the individual destroyer positions the destroyers join it.

In offensive battles tank destroyers penetrate with the automatic riflemen and attack enemy firing points as well as tanks in cases where replenishment of expended fuel bottles is expedited. If enemy tanks counterattack, the destroyers quickly take up positions in trenches captured from the enemy, communication trenches, shell holes, fox holes, or other cover and wait for the enemy tanks.

Dug-in German tanks provide still another mission for the destroyers.

In the enemy rear, destroyers are given missions such as the destruction of staff headquarters, ammunition dumps, fuel bases, etc., and for support they are given a section of automatic riflemen. After completion of the mission the destroyers retire to friendly positions under cover of the automatic riflemen.

Upon discovery by the enemy of destroyers who have penetrated, they are ordered not to give battle but to withdraw to cover.

It must be emphasized that each task is a completely new one, and that very few rules can be laid down for this type of "commando" fighting. It is obvious that the job requires an alert, smart, well trained and brave type of man.

Summary

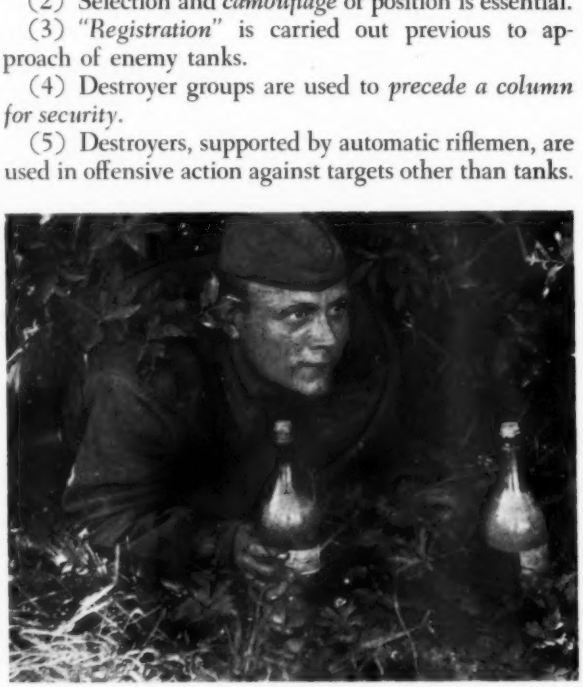
(1) Tank destroyers consist of *three men;* two with fuel bottles and one with a tommy gun.

(2) Selection and *camouflage* of position is essential.

(3) *"Registration"* is carried out previous to approach of enemy tanks.

(4) Destroyer groups are used to *precede a column for security.*

(5) Destroyers, supported by automatic riflemen, are used in offensive action against targets other than tanks.



A Red Army man, armed with bottles filled with a combustible liquid lies in ambush for enemy tanks.

*Za *Oboronu,* April, 1942.

General Hawkins' Notes

Fire Power vs. Armor

SINCE the termination of the First World War, and particularly during the last decade, great improvements have been made in armored motor vehicles of all kinds. Mechanical reliability, speed, mobility, armament and armored protection, all have advanced by leaps and bounds. It finally became obvious that if another European war should come (despite the peaceful dreams of the larger part of our population) then mechanized forces would play a prominent if not a paramount rôle.

Some extremists maintained that air force alone could answer all of our war needs. Others thought that we would need ground forces as well—but only armored forces. It was in vain that some of us, at the risk of our professional reputations, published articles protesting that if or when war came ground forces of all kinds would be needed in great numbers and that armored forces alone would not be sufficient.

It was some years before the attack on Poland that a few of us began to urge the making in great numbers of guns that could successfully oppose tanks. We foresaw that should Germany attempt the conquest of Europe by means of a quick, short, violent attack upon the several countries that would be involved, she would count largely upon the armored forces that she was so obviously preparing. It was evident that with such a head start as Germany had over other nations in the way of armored forces, her opponents would not be able to catch up to her in the production, organization or training of such forces before she launched her attack. Realizing this, a few of us advocated special efforts to devise and produce a weapon that would be effective against tanks.

Of course at that time, the proper type of antitank gun had not been determined. But had it been realized how important it was to have some weapon and some method with which to oppose the violent storm that was so obviously coming in the shape of armored forces, there would have been time for much that could have been done.

It should have been apparent as early as the year 1937-1938 that the storm was coming and that there was not time to build tanks in sufficient numbers. There was time, however, to have made antitank guns, and to have improvised out of old 3 in. field guns, or 75mm guns, enough effective power to make up the deficiency in new and better antitank guns. There was urgent need for immediate action and great haste.

Unfortunately, the then prevailing opinion was, that offensively the only weapons to oppose tanks were other tanks. Defensively, it was believed—at least by the French and British—that artillery, mines and various obstacles, with a few small calibered antitank guns distributed amongst the infantry regiments, would be enough.

The great importance of numerous tank destroyer troops, organized in separate units and armed with mobile guns of sufficient caliber, should have been realized at that time. But if it was, very little progress was made.

The truth is that the assertions of certain tank enthusiasts to the effect that the only way to stop a tank was by a tank, were responsible for the failure on the part of the Allies to have enough effective guns to afford serious opposition to the German tanks in France in the year 1940. Since they did not have enough tanks to take the offensive against German tanks, the Allies seem to have reasoned that the only thing to do was to go on the defensive and rely as before said, on airplanes, artillery, mines and obstacles. As it turned out, these measures were ineffective, and the German armored forces in France ran wild as everyone now knows.

All of this led people in America to believe that the tank was invincible. But the tank is not invincible. As has been written often in these Notes, the proper way to deal with enemy armored forces is not by the initial use of our own armored forces but by the initial use of our tank destroyer forces; and then by counterattack with our own armored forces supported by other ground forces. The use of airplanes in both phases of such a battle is, of course, indicated and, in fact, necessary. The Russians have discovered these principles and have used them successfully.

General Montgomery, in command of the British 8th Army in Africa, used these principles in his attack at El Alamein. His infantry, supported by artillery and antitank guns, and tank destroyers, was used initially, and his armored force was held in reserve. When the Germans counterattacked with tanks they were smashed. The British armored forces were then used very successfully against other troops of Rommel's army.

There are those who think, however, that fire power outside of a tank cannot cope with tanks. We have insisted in these Notes repeatedly that the time would come when tank destroying guns would obtain the mastery over tanks, and that when that commenced to be true the decline of armor in comparison with fire power would begin. It has already begun. This was obvious

in Russia in 1941. It has been obvious in North Africa for a year.

Now it is a well known fact that American made self-propelled tank destroyers were furnished in some numbers to the British 8th Army in Egypt. This new gun is accredited with having smashed the tanks of General Rommel's armored force in Africa and with having contributed much to the recent British victory in that country. If the claims made for this gun are true, we can see the handwriting on the wall. The dominence enjoyed by armored forces on the battlefields of 1939 and 1940 is over.

As mentioned before, this decline had become apparent in 1941 in Russia. In a recent newspaper dispatch, Henry Shapiro recently quoted Lieutenant General Chuikov as giving much credit for Russian successes to their *Katushka,* the still secret Russian gun that is responsible for many tank casualties. (See below.)

It is another example of the old story of *fire power versus armor.* Fire power always wins in the end.

This does not mean that armor will be discarded. Warships have retained armor even though the projectiles fired from big guns can pierce it. Armor gives protection against small arms, and all guns but those especially designed. Therefore, armor will continue to be used to give protection against ordinary weapons and to force the enemy to take special measures to protect himself against armored vehicles. Nevertheless, armored force will gradually lose its abnormal ascendancy, and, although useful and necessary, will never again occupy the powerful and dominating position that it held for a brief moment in the early part of this war. Although the speed of motor vehicles on roads or suitable terrain will continue to be very important, even that value will be somewhat lessened by the coming inability of armored vehicles to give the same protection to motor columns that has been relied upon for the last three years.

We are creating many new divisions of armored troops for this war. And we are right in doing so. Armored force is a branch of the army that will be important for an indefinite time to come and perhaps always. But it may now be noticed that war correspondents and press writers have at last awakened to the paramount importance of infantry and other arms and are giving them more notice and more due credit than at any time since the advent of the two new arms—air force and armored force.

The fire power of the tank destroying guns is restoring a proper balance to our war machine.

Antitank Defense*

THE most important single consideration in the defensive battles now being conducted by the Soviets is the defense against German tanks.

Correctly disposed and camouflaged, antitank weapons can and are stopping the German tanks. One case of a recent battle is recorded in which three antitank guns of the regimental artillery held off fifty-six German tanks in an all day battle and destroyed five others. Another case records that thirty-five to forty German tanks attempted to cross a river over a single bridge. One well placed, antitank gun destroyed five of them and forced the remaining tanks to seek other means of crossing.

No set rule can be laid down regarding the density of antitank weapons on any sector. The system depends upon the terrain and the local situation. In general, there should be greater density toward the rear. An attack by a large number of tanks is met at the front lines by artillery and rifle fire. Then antitank rifles and destroyer tanks come into play. If the enemy tanks still break through they run into tank obstacles defended again by flanking and rear antitank fire. Soviet infantry at this point attempts to cut the German infantry off from their tank support. The tanks then continue to run into tank destroyers and increased mine fields.

Where Soviet tanks are used in the defense they must not be pushed out front but scattered to the rear and dug in to await a possible break-through, where they can then do their best work.

*The brief of an article written by Major General F. Zakharov.

Katushka's 'Unpopular'

General Chuikov (defender of Stalingrad) said, ". . . In the Battle of Stalingrad the Russian hand grenade won general respect. Extremely unpopular with the Germans is our Katushka (the still secret Russian gun), which the enemy call 'Stalin's machine.' All living objects are destroyed wherever its shells burst."—HENRY SHAPIRO, United Press Correspondent, Moscow.

U. S. Armored Forces in North Africa

A U. S. 105mm tank destroyer rolls across the Algerian countryside after the Allied landings on the North African coast. The picture below shows a tank crew of the U. S. Armored Force in North Africa.

Cavalry and pack artillery mounts are unloaded from ship in New Caledonia.

U. S. Cavalry and Pac

The strength of the United Nations forces in the Southwest Pacific theater of operations now is augmented by the presence of mounted troops from the United States. For certain problems of defense and offense in that area they are indispensable.

Pack train maneuvers in New Caledonia in a settin g reminiscent of our own great western outdoors.

Horses are led to a corral to get their "land legs" after voyage to New Caledonia.

Horses in New Caledonia

The mules plod along with their packs. These sure-footed hybrids can travel all day over difficult terrain and carry 300 pound loads.

Editorial Comment

Tactical Data From Fighting Fronts

Each of the last several issues of The Cavalry Journal has contained a number of authoritative articles on *practical applied tactics* from one of the principal *fighting fronts*—the Russo-German line that extends for over 2000 miles—from north of Leningrad to Rostov and beyond.

Many of the articles have arrived by cable direct from the War Department, U.S.S.R., Moscow. Some have been furnished us by the Soviet Embassy in Washington. A few have come by way of other sources. All are authoritative. All are based upon experience rather than theory.

In times of peace the most reliable military deductions are those based upon maneuvers. In times of war the only deductions that are practicable are those based upon actual fighting.

The Cavalry Journal, during this time of war, is making a desperate effort to bring to its readers the *essence* of *lessons learned* from combat, in order that both officers and men of the U. S. Armed Forces may profit from the experiences of others.

Many of the articles deal with the most fundamental expedients of survival—simple tactics developed from the necessities of war—kill or be killed.

In these lessons from the war fronts two particular tactical features have been emphasized again and again.

One is—

The Tactical Employment of Small Units

In a war of survival, tactical expedients grow out of necessity.

A fuel bottle, accurately aimed, stops an enemy tank (Page 26). A pilot runs out of ammunition and he learns how to "ram" his opponent, send him to his death, and bring his plane in safely (Pages 46 and 47). German parachute troops land, and small detachments dispose of them (Page 48). From three to twelve men, with rifles, tommy guns and machine guns, rout forces superior in men and matériel (Page 44).

Experience proves that in warfare the small unit—well trained, determined, and persistent—can wreak much damage upon the enemy. Individual snipers, lying patiently in ambush, are accredited with from 150 to 300 casualties, and they live to tell the story.

The other important lesson from Russian reports is—

The Value of Reconnaissance

Get as much information of the enemy as you can, before you strike!

In every article from Russia, every description of combat is prefaced by, "After a thorough reconnaissance had been made . . .," "After a patrol had reconnoitered . . .," "After having made a careful reconnaissance of the enemy's position . . .," *ad infinitum.*

Regardless of strength, any action is more powerful if the commander has some knowledge of the strength and disposition of his adversary. Without this knowledge, he moves blindly. He can be delayed, stopped or thrown back *unnecessarily* by any sudden and unexpected encounter *of a hostile force half the size of his own, whose commander is well informed of the situation.*

This is one of the most potent lessons that has come from a *fighting front* and one that we cannot afford to ignore. The age-old principle of conducting proper reconnaissance (regardless of the mission, size, or type of troops involved) is essential to successful combat in any war, no matter how modern the war may be. Too often its value is realized and appreciated most, when "it was not there."

The time to learn and practice this lesson starts during the unit training period. We cannot wait until the enemy is pounding at us to learn the lesson of *"how, what, where"* is the enemy. Let us learn from the valuable experience of those who have fought this war ahead of us.

Let us use our reconnaissance units for what they were intended. Let us practice in maneuvers what we are going to find necessary in battle.

* * *

"Vehicular Reconnaissance"

The article by this title which appears in this issue is an excellent, succinct summary on this subject.

Innumerable requests have been made of us for this article, originally printed in mimeographed form and mentioned in the September-October issue of The Cavalry Journal. It is with much pleasure that we present it intact on page 49 and recommend it to all, especially those officers and men on duty with reconnaissance units.

* * *

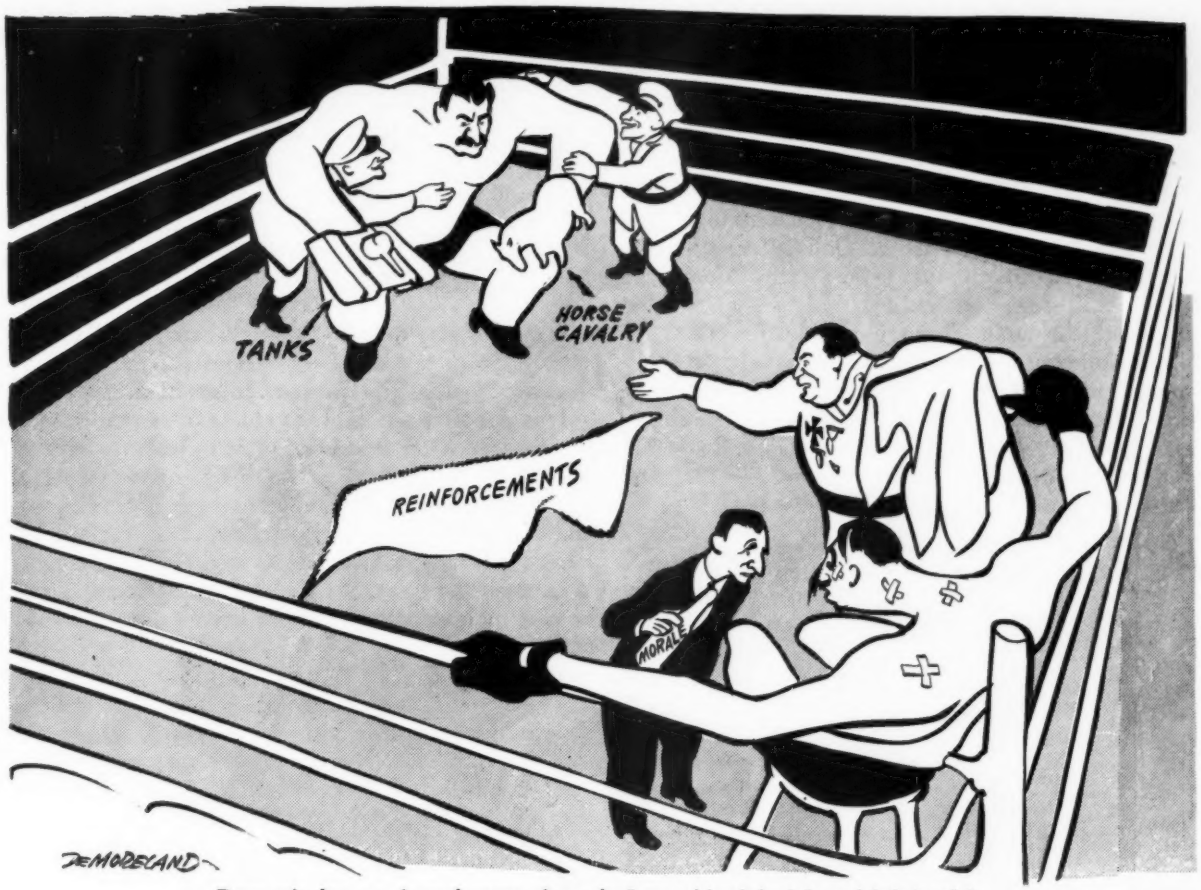
Dirty Fighting Can Be Fair Play*

If there is one single characteristic that is typical of all Americans everywhere, it is good sportsmanship.

That word takes in a lot. Think it over for a minute. Sportsmanship is more than playing clean ball. It is playing clean in the game of life. It is live and let live, it is liberty, it is freedom, it is following the rules of the human game; yes, all that comes under the heading of good sportsmanship.

*Courtesy, Bill Stern, NBC Director of Sports.

THE SELF-STYLED "CHAMP" IS WORRIED!



Rous mit der towels und vater—how do I stop his right jab and left hook?

Perhaps that is why sports in the United States enjoy a popularity such as is known in no other country in the world. Americans are just built that way. They like action, excitement, and thrills, but they play by the rules and expect the other fellow to do the same.

But what happens when the boys come off the gridirons and diamonds and courts, and get into a game where the other team starts playing dirty, a game where there's no "Ref" to impose the penalties? Suppose it's a game of life and death and you are at war with the Nazis and Japs?

Do we still play fair, or do we toss aside everything that our boys have been taught for generations? That is a problem that is facing a lot of the boys in service, whether they are former All-Americans or grandstand quarterbacks.

You hear a lot about the "dirty fighting" being taught the boys in service. It doesn't sound like American sportsmanship, and it seems to bother a lot of "armchair strategists." Let's forget those people and think about the people who are doing that fighting—the boys in uniform.

They are being taught all of the tricks of the trade of war—things that they must know. Like the war itself, we did not ask for dirty fighting, or any fighting. But if that is what the Axis wants that is what we will give them.

We do not stoop to tricks like machine gunning fliers who "hit the silk," or shelling men in open boats, or shooting prisoners. But in the close-in fighting there is not a reason in the world why the boys in uniform should not get tough and rough. If they do not, the Japs and Nazis will. It is a case of life or death.

It is too bad that it has to be that way. But there is just no referee in this game, and unless the boys fight as dirty as their enemies, it is going to be too bad for Americans.

* * *

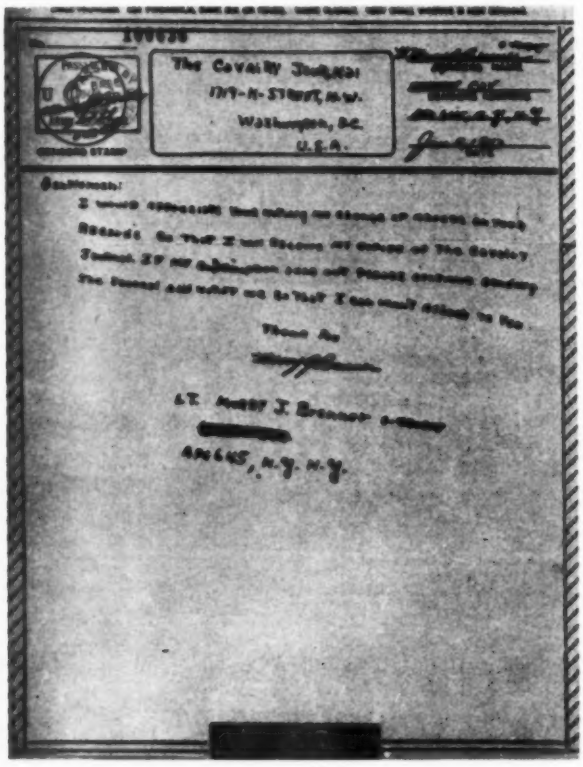
Cavalry Journal Circulation Reaches A New High

If you do not receive your first copy of the JOURNAL as promptly as you might wish, please be just a little patient with us. We make every effort to get the first JOURNAL in the mail within a day or two after receiving your order, but our Circulation department has been so deluged with new subscriptions recently that we have sometimes fallen behind schedule.

Our aim is to print uptodate information on combat experiences and techniques and to get the JOURNAL to our subscribers as quickly as possible. The first is useless

without the second, and we cannot do the latter without your coöperation. Drop us a card when your address is changed and keep us abreast of your APO number if you are overseas. From all the evidence we have, the Army Postal Service is doing a magnificent job and the JOURNAL is being delivered promptly at many an overseas front and camp. Reproduced on this page is a V-mail change of address which reached us eight days after it was mailed from the ETO. The foresighted officer who took three minutes to send us that address will receive this issue of the JOURNAL only a few days after the subscriber stationed right in Washington, D. C.

We appreciate your advising us as to what you like to read and see in the JOURNAL. The Reconnaissance article by Lieutenant Colonel Cook and the increase in exclusive pictures in this issue are the results of the widespread demand from our members. The CAVALRY JOURNAL is your magazine and you make it what it is.



This V-mail change of address reached us in eight days from the European Theater of Operations. The mail and the *Journal* are getting through!

Cavalry Journal Material

Particularly interesting is the concensus obtained from the "proxy card" comments on the subject matter that has appeared in The CAVALRY JOURNAL during the past year.

As usual, the majority of proxy cards gave no answer to our query, "What article did you like best?" But a tabulation of those comments that were received netted the following information:

Reports from the battlefronts	134
Cavalry	120
Armored	107
Reconnaissance	57
"All good"	41
Training methods and new weapons	24
Air-tank-horse in reconnaissance	10
Miscellaneous	44

It is gratifying to find that this tabulation follows so closely the proportionate division of subjects as they have appeared in The CAVALRY JOURNAL during 1942.

It is not always possible to obtain authoritative material on each of the above subjects for every issue. During the past year, however, a number of valuable articles have been published on each of these subjects, and each issue of the JOURNAL has contained several feature articles that have attracted sufficient attention to be reprinted by one or more other military publication. A number of articles have been reprinted as official training data.

During 1943 The CAVALRY JOURNAL will again make every effort to print the authoritative material on those subjects that its readers most desire.

FEDERAL INCOME TAX LIABILITIES OF OVERSEAS PERSONNEL OF THE ARMY*

The Act of Congress approved March 7, 1942 (Public Law No. 490, 77th Cong., 2d Sess.), provides that, when any individual in the military forces is serving outside the continental limits of the United States (defined in the act to mean outside the States and the District of Columbia), at the time a Federal income tax return or payment of Federal income tax would ordinarily become due, the due date for filing the return or making the payment shall be the earliest of the following dates: (a) the fifteenth day of the third month following the month in which the individual concerned ceases (except by reason of death or incompetence) to be outside the continental limits of the United States, unless prior to the expiration of such fifteenth day he is again outside the continental limits of the United States, or (b) the fifteenth day of the third month following the month in which the present war is terminated, as proclaimed by the President, or (c) the fifteenth day of the third month following the month in which an executor, administrator or conservator of the estate of the individual concerned is appointed.

The act above referred to does not relieve an individual in the military service of liability for Federal income taxes; it merely postpones the time when returns must be filed and payments made by individuals coming

*The information set forth herein was obtained by informal inquiry of the Office of The Judge Advocate General of the Army.

within its terms. The act is a relief statute and a person entitled to its benefits may nevertheless file his return and make payments if he so desires.

The Commissioner of Internal Revenue also has power to extend the due date of a payment or of a return, which has already been deferred under the above act, if an individual returning from a station outside the States or the District of Columbia has need of and applies for such further extension.

In the event that inquiries are made by the office of the collector of internal revenue concerning the failure of an individual to file an income tax return or to make a payment of income tax upon a due date, a statement by the wife of the individual concerned, or of a responsible person in a position to know the fact, that the individual was outside the continental limits of the United States at the time the return or the payment of tax was due should satisfy the office of the collector. It would appear desirable, however, both from the standpoint of the individual concerned and the Bureau of Internal Revenue, that written advice be given to the local collector in advance of the ordinary due date of a return or of an income tax payment that the individual concerned is in the active military service and is, or will be on that date, outside the continental limits of the United States. The exact whereabouts of the individual need not, of course, be given.

The privilege of deferring the reporting and payment of tax on the income of an individual serving outside the continental limits of the United States applies not only to his military pay but also to his income from sources within the continental limits of the United States even though such income may be received by the holder of a power of attorney, or by the wife or other dependent of the individual concerned. While it is the general practice, and advisable, for an individual, before leaving for a station outside the continental limits of the United States, to leave a power of attorney authorizing his wife or some other person to prepare and file income tax returns for him, the person so empowered need not file a return but may accept the benefits of the act above referred to on behalf of the individual concerned.

Allotments from pay are not income to the allottee and need not be reported as income by the person receiving the same. The amount allotted remains the income of the individual making the allotment, to be reported and a tax paid thereon when a return or payment is due, subject, of course, to rights of deferment. Income from property owned by an individual constitutes income of the person owning the property and should be reported by him when he files his income tax return. If, therefore, an individual serving outside the continental limits of the United States, authorizes his wife or other dependent, to receive and spend for her own use income from property owned by him, such income need not be reported nor any tax paid thereon by the person receiving the same. That part of the family allowance granted to and paid by the Government to dependents of enlisted men (Public Law No. 625, 77th Cong., 2d Sess.) which is charged against and deducted from the pay of the enlisted man is to be included in his gross income as though received by him unless it is paid to a divorced wife or a wife legally separated from him in which instance it is taxable to the wife. That portion of the family allowance contributed by the Government to the dependents of the enlisted man is considered as a gift and is not taxable either to the enlisted man or to his dependents under any circumstances. (See. I. T. 3574, 1942 Int. Rev. Bull. No. 36, p. 2; Sec. 120, Revenue Act of 1942.)

The victory tax of 5 per centum imposed by the Revenue Act of 1942 upon income received after December 31, 1942, applies to the income of military personnel, including their military pay, in excess of $624. A return covering the victory tax is not due until March 15, 1944. The act of March 7, 1942, above referred to, will, however, permit deferments of returns and payments of the victory tax as well as the regular income tax. Income in excess of $624 separately earned after December 31, 1942, by wives of military personnel is subject to the victory tax of 5 per centum and, to the extent that such income is composed of "wages," is subject to the withholding of 5 per centum thereof under the Revenue Act of 1942 as an aid to the collection of the victory tax.

The revenue laws do not grant any general deferment to wives of military personnel serving outside the continental limits of the United States for the filing of returns or the payment of income taxes with respect to wages or salaries earned by them or income from property owned by them. Section 507 of the Revenue Act of 1942, approved October 21, 1942, however, provides for the suspension of time limits running against the Government, taxpayers and others in certain cases where, by reason of the war, timely performance of acts affecting Federal tax liabilities and rights is impossible or impracticable. The Commissioner of Internal Revenue has not yet promulgated regulations with respect to section 507. In some instances it may be impracticable for wives of individuals domiciled in community property states to file individual income tax returns on the due date. Furthermore, it may be impracticable for a wife to file a separate income tax return with respect to her separate income in cases where she may have losses more than offsetting her income, which, in a joint return, could be used to offset her husband's income. Or a husband may have losses in excess of his military pay which could be used, in a joint return, to offset the separate income of his wife. Where losses incurred by one spouse or the other raise the question of the advisability of a wife filing a separate return with respect to her separate income, competent counsel or the office of the local collector of internal revenue should be consulted concerning her rights under section 507 of the Revenue Act of 1942.

The Defense of Bir Hakeim*

May 26—June 10, 1942

UNDER orders from General de Larminat, General Koenig was in command of the brigade entrusted with holding Bir Hakeim.

Naturally we are not allowed to furnish a complete picture of the battle order of our forces in Libya; we can, however, in order to give an idea of their nature, mention certain of the units which were included therein.

Foreign Legion. (Elements of the former 13th Foreign (Battalion) and Legionnaires rallied during the Syrian campaign.) Veterans of Narvik, and Eritrea, (Keren and Massouah).

Marines. (Veterans of the 24th Colonial (battalion) stationed at Cyprus at the time of the armistice and who joined the Free French Forces at that moment, participated in the first Eritrean campaign, in the Syrian campaign; new elements rallied in Syria, etc.). Battalion composed entirely of Frenchmen from continental France, particularly Parisians and Bretons.

Pacific Battalion. Recruited among the Frenchmen of our possessions in the Pacific and native Maoris.

Makeshift battalion composed of fragments drawn from different regiments of the Chad. Sharpshooters from the Sahara, recruited in French Equatorial Africa, one of whom played a capital rôle in Eritrea, at Kub-Kub, in the battle of Keren.

Batteries of 75mm artillery. Formed around the first batteries from French Equatorial Africa, which participated in the Eritrean and Syrian campaigns.

Battalions of machine guns mounted on weapons carriers (auto-mitrailleuses). Formed in Syria with motorized units of the cavalry.

Light tanks, supporting the machine guns mounted on weapons carriers.

Quartermaster Corps. Strengthened by the experience acquired during the campaigns in Eritrea and Syria.

Mobile operations battalion. Commanded by an officer and formed of elements which participated in the operation of Koufra.

Medical Corps. French doctors and nurses.

The Theatre of Operations

The Bir Hakeim plateau extends for several square kilometers at the crossing of the caravan routes. One route leads towards Tobruk, 80 kms. to the northeast; the second, towards Gazala and El Gubbi to the north; the third, towards Sidi Omar, to the east on the Egyptian frontier.

Through its geographic situation, at the extreme south of the Libyan front, Bir Hakeim constituted a position as important as it was dangerous. The troops which defended it had, at the same time, to face a frontal attack and prevent the enemy's attempt to turn the left flank of the allied forces.

One cannot, therefore, overestimate the confidence shown French troops by the British High Command who handed over to them the safeguarding of this bastion whose fall was, indeed, indispensable to Rommel's operations.

The Battle

It was on Tuesday, May 26, that after a three months' calm Rommel undertook in Libya the offensive which inaugurated what *The London Times* called the Sixth Campaign since the beginning of the war, the first having been launched Sept. 13, 1940.

It was also on that day that, for the first time since the the capitulation of France, Free French Forces participated in a battle against Axis troops. Our men, for the most part, were equipped with French matériel recovered in Syria after the cessation of hostilities against Vichy.

At the moment, General Auchinleck, adopting defensive tactics, used antitank batteries on positions chosen by him. The number of tanks which he had was not inferior to that which the enemy had, but the majority of the British tanks were not fitted with cannon of equivalent fire power.

On the eve of the first engagement the Stuka dive bombers already had attacked the Allied lines, but the two armies were still separated by a vast "no man's land."

What was the principal objective of the enemy? It was still too early to deduce it from his dispositions. This was made even more difficult to determine because it was not known whether or not he was sending in all of his tanks. It was supposed, however, that the enemy

Free French Marines who made such a gallant stand at Bir Hakeim are shown manning an antiaircraft gun somewhere in Africa.

*Extracted from *Publications de la France Combattante* No. 52.

A Fighting French seventy-fiver hurtles shells across the desert toward the enemy. The above picture was dated May 18, 1942 and was probably made in the vicinity of Bir Hakeim.

believed that he could reach Tobruk by crossing the crest of El Akaba which stretches out between Bir Hakeim and the sea. As for the armored forces of General Ritchie, they were disposed so as to answer an enemy attack from the north or from the south, quite ready, as events proved, to face the eventuality which took place.

British aerial reconnaissance was able to observe the preparations of the enemy offensive. To upset these preparations the R.A.F. heavily bombarded the enemy airfields. Raids followed each other all night long and were reinforced at dawn and dusk by low altitude attacks carried out by light bombers and fighters.

"Decisive Attack"

The meaning that the German High Command intended to give to the operations being projected was another uncertainty. This was made little clearer after reading an order of the day from Rommel to his troops, which had come by chance into the hands of the British General Staff. Here is the text of it, dated June 26, 1942.

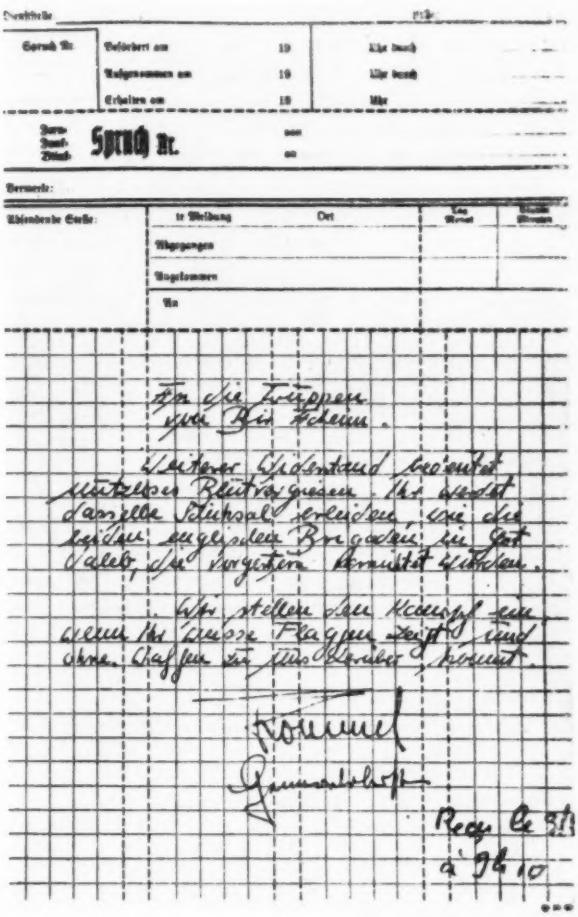
It bears the title: "Decisive attack against the British," and declares: "The African Armored Army, in the course of important operations, passes over today to a decisive attack against the British mobile forces in Libya. Recalling our glorious deeds of the months of January and February, we shall attack and put the enemy to rout everywhere he turns up."

This text was accompanied by a commentary in which Rommel explained to his troops that, in order to make their success easier for them, he had sent out forces superior in number to those of the Allies, equipped with a complete armament and supported by a powerful aviation. He concluded by greeting His Majesty the King of Italy and Emperor of Ethiopia, the Duce of the Roman Empire, and the Führer of Greater Germany.

On the first day of the attack, the 1st Brigade of the Free French Forces was reinforced by the 3d Indian Motorized Brigade. On the twenty-seventh an attack was launched at daybreak by the Italian light tanks of the Mobile Corps; it was repulsed. Enemy orders which fell into our hands bore witness to the fact that Rommel's intention was to subdue Bir Hakeim at the beginning of operations. The defeat which he suffered lengthened his lines of communication, made them very vulnerable and had considerable effect on the outcome of the battle.

Later in the day, all the enemy motorized forces moved to the south of Bir Hakeim, then fell back towards the north on Tobruk.

FACSIMILE OF THE ULTIMATUM DELIVERED BY GENERAL ROMMEL TO GENERAL KOENIG ON THE 3RD OF JUNE AT 9:30 A.M.



Translation:

To the troops at Bir Hakeim:

A prolonged resistance will provoke useless shedding of blood. You will have the same fate as the two British brigades at Got Saleb. We shall stop the fight if you hoist a white flag and come to our lines without arms.

ROMMEL,
Field Marshal.

The Assault

Rommel threw into the attack on the French position the whole 20th Italian Armored Corps including the

102d Armored Division, the Ariete and the 101st Division from Trieste.

On our right an English division was traversed by a German armored column, but repaired the breach. During the night the German advance continued and at dawn, on the 27th, came out exactly to the south of Bir Hakeim. This attack was repulsed with the help of the fighters and bombers of the R.A.F. who violently bombarded the enemy motorized forces.

The intention of the adversary was becoming clearer; it appeared now that Rommel's offensive was developing on a triple line; the Nazi tanks were to press the Allied troops to the north and to the south of Bir Hakeim, as well as along the coast road leading to El Gazala. Of these three attacks Rommel, without a doubt, would push the one which would bring him eventually the greatest initial success.

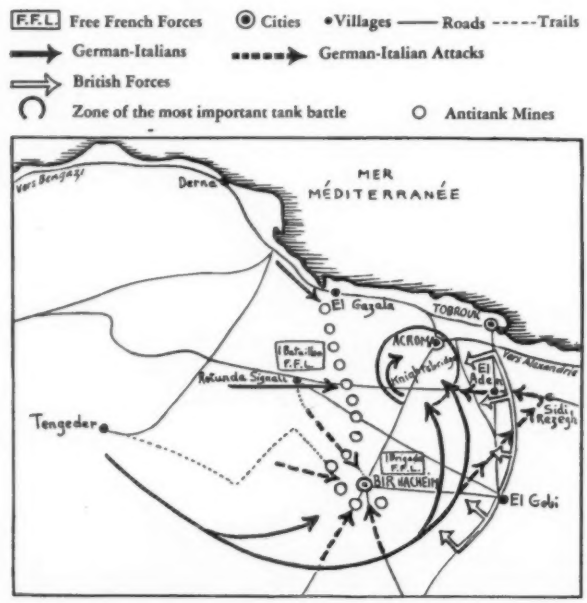
For the moment, however, it was not yet possible to judge the results of the struggle. In this connection the German short wave broadcast announced that there would be no communique concerning Libya before the next day. It added the following strange commentary:

"The English themselves do not explain clearly the tactical or strategic meaning of Rommel's troop movements. They do not seem to consider that these movements are a part of a great Axis offensive."

First Encirclement

At this point, the Free French Forces were cut off from their rear by the advance of German armored divisions rushed forward by General Bismarck, but they resisted the attacks and destroyed forty-five of the tanks. Better still, they effected a brilliant sortie in the course of which they completely destroyed a great number of vehicles and took several hundred prisoners including an Italian colonel.

This was the moment that Mussolini chose to re-



Spahis, the French Colonial Cavalrymen, gallop their mounts down the side of a dune in the Egyptian desert.

iterate his claims about Nice, Corsica and Tunisia! A French commander stated to a reporter from Reuter's News Service: "We have already swallowed down six Italian battalions; we ask only to digest others." But the Italians, having had their fingers burned, did not attack again. Soon, the British maneuver forced Rommel to fall back with his troops; the Ariete Division was drawn back with the others; for a time the Free French Forces ceased to be encircled.

One of the two enemy columns advancing to the northeast of Bir Hakeim tried to reach El Adem. It did not succeed, but small detachments which stole away from the battle succeeded in making their way through the Allied minefields to some 16 kilometers outside of Bir Hakeim, and thereby created a breach in which Axis troops were able to settle.

During the next two days the Allies put forth all their efforts to close this break, but they were unable to dislodge the enemy although they violently attacked his supply lines and inflicted heavy losses on him. The R.A.F. continued to support our ground forces, not only by intercepting the enemy air attacks but also by causing enormous losses to their vehicles.

On the 28th of May, Air Vice Marshal Conyngham decided to send in all his planes in low altitude attacks against armored transports and enemy trucks in this region. These attacks continued with the maximum intensity during the three days that followed.

It seemed that the armored units of the Axis operating on the southern front in Cirenaica had made a broad fan-shaped movement to the south of Bir Hakeim and concentrated to the northeast at the crossroads found at 40 kilometers to the south of Akroma; that is, between Bir Hakeim and the coast.

The Fifth Day

On the fifth day of the German offensive, the battle reached its climax when the enemy tried to pass through

the breaches. It was at the crossroads, nicknamed Knightsbridge, that the fighting was the most violent. Rommel had his supplies pass to the south of Bir Hakeim, but the ground attacks of our troops and the British air attacks made the job very difficult for him, although he was able to maintain his break-through on the left flank of the British front.

On the 30th the Free French Forces attacked the enemy field workshops twenty kilometers from our position and, coöperating with the 7th English Motorized Brigade, the 29th Hindu Infantry Brigade and the King's Dragoon Guards, destroyed twenty-five enemy tanks which, their gas tanks empty, had been forced to stop near Bir El Gobi. On that same day the Free French Forces took a prisoners' camp by storm and succeeded in freeing 600 men of the 3d Indian Motorized Brigade, who joined them and continued the fighting.

On the 28th, 29th and 30th of May, violent fighting took place continuously between British armored divisions and brigades and the German Afrika Korps supported by the Italian Mechanized Corps. The battle continued with advances and withdrawals in a vast zone that extended from Acroma on the north, to Bir Hakeim, to 65 kilometers farther to the south at the approaches to Tobruk, to our minefields at 60 kilometers to the west.

"To this day," wrote General Auchinleck, "bitter fighting continues, and the battle is far from over. . . . This defeat has cost him (Rommel) dearly in men and matériel."

The Cairo communique stated: "Since Saturday noon, the enemy has been trying to concentrate on the west the most of his armored forces. He is using two paths cleared through our minefields which are near the Capuzzo trail. Although constantly attacked by our armored forces and the R.A.F., the enemy has succeeded in bringing into position his antitank artillery in order to cover the two cleared paths with the aim of preventing our armored forces from closing the break-throughs."

At nightfall on the 31st of May the enemy succeeded in sending numerous tanks and trucks to our rear through one of the two breaches which he had protected with numerous antitank cannon against the Allied attacks that had come from the west.

A great number of enemy tanks and vehicles, however, remained on the exposed side of this barrier. Our troops, with the vigorous support of the fighters and bombers of the R.A.F. continued to harass them without respite and to destroy them. The region east of Bir Hakeim was cleared by the Free French Forces. Enemy losses included at least 260 tanks destroyed or captured, in addition to a great number of trucks.

On the first of June, the King's Dragoon Guards, advancing on Rotonda Segnali, 45 kilometers to the west of the chief Allied positions, found this point unoccupied; a column of Free French Forces had received the order to occupy this spot along with the 3d Indian Brigade.

The Second Phase

The first phase of the attack, in which Rommel aimed to take Tobruk, failed. He later succeeded, we must admit, but the Free French Forces first foiled a new attempt on the part of the Germans to join the Italian infantry which was attacking Bir Hakeim.

During the day of June 2, the Germans launched a violent attack on Bir Hakeim with fifty tanks and Italian infantry, and for a short time the French brigade was threatened. Called upon by the enemy to surrender, it answered by a historic remark which certainly has already served in similar circumstances, but which was none the less apt here.

It became more and more clear that Rommel's intention was to isolate Bir Hakeim.

General Kruewell, commander of the Afrika Korps, was taken prisoner when the reconnaissance car in which he was riding was disabled within our lines.

The personal diary found on this officer revealed that on the preceding Monday he had conferred with Hitler and General Halder, personal military counselor. Two days earlier Kruewell had conferred with General Keitel, Chief of the Nazi General Staff and with General Cabellero, Chief of the Italian General Staff.

In spite of the sandstorms on June 3, the enemy renewed his attack on Bir Hakeim with great violence. Once again, the enemy repeated to the French troops their injunction to surrender—with the same lack of success.

A column of German and Italian tanks attacked the French forces from the northwest towards the southeast: elements of the two divisions of Italian infantry from the southwest towards the northeast. The French garrison, reinforced by infantry elements from the 7th Motorized Brigade, repulsed all assaults. A column of British tanks participated in the defense of Bir Hakeim by attacking from the rear the convoy of German tanks, but General Ritchie, trusting in the worth of the French soldiers, let it be known that he was not anxious about the fate of Bir Hakeim.

(Editor's Note: The French went on fighting for another eight days and did not meet the fate with which they were threatened. On June 9th General Ritchie ordered the encircled garrison to evacuate Bir Hakeim, and on the night of June 10th the break-through was effected. Three-quarters of the garrison reached the British lines in safety.)

Machine Gun Fire in Flank Attack

*By Captain S. Leonov**

EXPERIENCE has shown that in winter the Germans stick closely to inhabited places. They are unwilling to accept battle in open country and convert every village into a stronghold.

In the village of Semenovka almost every building had been made into a fire position, all approaches toward the village were covered by machine gun and mortar fire. In a brick barn near a ravine, the Germans had set up three machine guns to fire through loopholed walls while a short distance away an antitank gun was hidden in some bushes.

The country around the village was quite open, so that a frontal attack on such a strongly fortified position would have meant tremendous losses. The Soviet battalion commander decided to take the stronghold by a flank attack, whereupon the company commander detailed Sergeant Sevtsov's machine gun platoon to silence the enemy fire position in the barn and attract the whole of the enemy's fire while the other troops were carrying out their flanking movement.

The machine gun platoon commander selected a position for his observation post, his main and reserve gun positions, and then covered his lines of communication between these points. There were bushes growing opposite the barn, and in front of them there was a very deep ditch. These furnished good cover for the machine guns and gave a good view of the whole of the enemy's defenses. The machine gunners took up their positions under cover and awaited the signal to open fire.

*By cable from Moscow, December 30, 1942. Courtesy, The Soviet Embassy.

Red Army soldiers man a gun in the firing line on the Russian battlefront.

The attack began with an artillery barrage. A direct hit was scored on the ammunition dump behind the barn, and one group of Germans rushed to extinguish the fire. At the same time, however, the enemy machine guns opened up fire, so Sergeant Sevtsov's machine gun platoon first directed all of their fire strength on the barn itself. Well placed bursts aimed at the loopholes quickly silenced two machine guns. Through his field glasses Sergeant Sevtsov studied the enemy position closely, and seeing that the Germans were running toward the fired munitions dump, he ordered gun layer Tsigankov to open fire on them. Through his glasses he had a good view of enemy soldiers falling as they were mowed down by the machine gun fire.

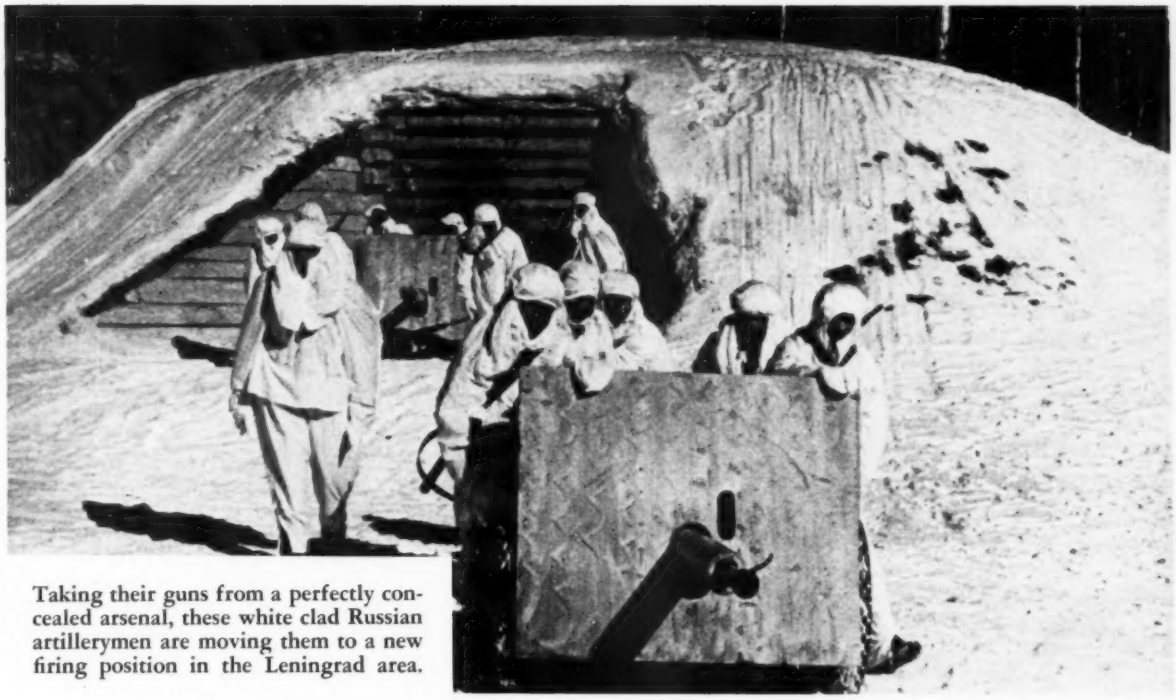
Meanwhile, machine gunner Smorodinov had directed intensive fire at the surviving loophole in the barn and at the same time covered approaches to the barn from the right.

Having dispersed the group of Germans at the munitions dump layer Tsigankov turned his fire to a position on the left of the barn and thus gave the Germans no opportunity to obtain munitions.

A company of mortars coöperated splendidly with the machine guns in this action. While the machine guns were silencing the fire points on approaches to the village, the mortars kept up fire on its outskirts, knocked out the antitank gun, and prevented the Germans from digging in to repulse the attack.

The art of maneuvering machine guns lies in the ability to transfer to fresh targets immediately that one has been dealt with but at the same time not to permit the enemy to move. Sergeant Sevtsov proved to be a fine machine gun commander, for when the Germans opened a withering fire on his machine gun position, the guns were no longer there. The sergeant had changed his gun position in time, and when the Germans opened fire the Soviet machine guns were all ready to turn on the new German fire positions and quickly came into operation. The Germans were not immediately aware of the danger which threatened them from their flank, and tried to turn their fire in that direction to prevent an attack. The machine gunners were ready for them and kept the Germans pinned to the ground. When the Germans began their retreat to the center of the village, gun layers Smorodinov and Kalachev concentrated their fire on them while Tsigankov cut off the retreat of the left group.

The plan drawn up by the commander of the attacking force was carried out in full. The drive from the flank captured the German stronghold and a greater part of the garrison was annihilated.



Taking their guns from a perfectly concealed arsenal, these white clad Russian artillerymen are moving them to a new firing position in the Leningrad area.

Artillery Fire Against German Tanks*

By The Guard's Major Azarov, Red Army

TANKS are the main striking force of the Hitlerite armies. In the struggle against German panzers therefore, the most important task of Soviet troops is the skilful employment of all active and passive antitank weapons. Soviet artillery plays the main part in this struggle. Hence the artillery commander must carefully study the ground in order to determine the direction from which the hostile tanks are most likely to appear and then organize an all-round defense, of which he is the center.

The struggle against the tanks will be successful only if every gunner has a practical knowledge of the tactics of the enemy tank units and sub-units, their favorite maneuvers (outflanking pincers and infiltration on flanks), and a thorough knowledge of the gaps between our units and theirs.

The success of the artillery action will depend on the extent to which the gunners have been trained to shoot at moving targets, both point-blank and from under cover. In this respect the battle for the point of Danilovka is interesting. An air reconnaissance reported that at about 30 kilometers from Soviet positions a large enemy tank column had been seen moving. The numerical superiority was on the side of the Germans. Soviet units had the advantage because their artillery had been previously placed in favorable positions. Every gun had an excellent fire zone. The mutual support of guns, well equipped gun positions, and the unexampled coolness and fine courage of commanders and men determined the outcome of this battle. Twenty-nine German tanks were destroyed. The gun crew under Lieutenant Lisin particularly distinguished themselves by destroying nine tanks.

Experience has shown that the effect of fire and maneuverability of the guns depends to a considerable extent on the equipment of the gun positions, their camouflage, and the punctuality with which they open fire. It is best to open fire at 400, 600 or 700 yards. The exact distance depends on the caliber of the guns and the nature of the ground.

Firing on moving targets has its particular features. When movements from flank to flank deflect, changes are made with accompanying range adjustments. First, the rounds are fired at one tank's length ahead of the target, and then subsequent rounds are adjusted in accordance with spotters' observations. If the first burst shows a lateral deviation of one tank's length or more behind the target, then the range is not changed, but an angle of the deflection is adjusted.

The ranges of the angle is between the line of burst and the line of the center of the tank, unless this is less than five divisions. For smaller deflections behind the target and also for lateral deflections ahead of the target, corrections are made in the adjustment of sighting when movements towards the gun position target is

*Courtesy, The Soviet Embassy.

bracketed by ranging on the center of the mass of tanks. If the lateral deflection is less than the size of the figure then it is usual to change the point of aim.

When deviations are very great, adjustments are made with an angular instrument. Sighting for the first rounds are made in accordance with measured range as laid down for antitank fire. When bursts are over, the sightings are reduced to two, three or four divisions; the number depends on the distance beyond the target, the speed of the tank and the rapidity of fire. When a tank approaches within point blank range, firing is continued without any change in the sighting of the gun. If the bursts are beyond the target, then we change the range by lowering the elevation about one-half division at a time.

It is very important to remember the methods in conducting fire on the tanks during various phases of the battle. If the enemy tanks are in large numbers and have broken through the defenses, then independent fire must immediately be opened. First of all, fire must be opened on that tank which can do the greatest damage to our infantry or even to the guns themselves.

After the first tank has been knocked out, fire should be immediately transferred to other tanks. Careful watch must be kept on the knocked out tanks, however, as they have a habit of suddenly coming to life again. It is very important to be able to take immediate advantage of the moment when a tank is turning or is stuck by some obstacle and exposes its most vulnerable point—its side with the engines, etc.

Success in battle against tanks is decided by the courage and determination of each gun crew, multiplied by the ability to conduct accurate fire. Enemy tanks are not terrifying to those who know their business, and who know how to combine knowledge with war experience and fearlessness.

Massed Trench Mortar Fire*

THE trench mortar is a powerful defense weapon and is widely used in the Red Army not only to neutralize and destroy the enemy's fire weapons, but often also to stem the enemy attacks on inhabited places.

Trench mortars first acquired prominent importance in the Spanish war of 1937-1939, where regular trench mortar units appeared for the first time. The mountainous character of the terrain in Spain encouraged the employment of mortars because of their high plunging trajectory. They could be used to fire over hill crests and at invisible targets, the destructive effect of their bombs being heightened by rock splinters.

Since then trench mortars have been adopted on a wide scale in all armies, and in many cases special units armed with them have been formed. This has been particularly true in the Soviet-German war. Trench mortar fire constitutes a powerful support to the infantry in both the offense and defense.

A case in point was the attack undertaken by the Germans, with the object of seizing the village of Nazarovka. The attack was launched from three directions. When the enemy tanks approached within 400 meters of the village, Soviet guns opened fire. The tanks came to a standstill, but the German infantry continued to advance. At the signal from Senior Lieutenant Frolov, the trench mortar unit under his command, opened heavy fire at all three German groups.

Thanks to the accurate aim and staunchness of the trench mortar crews the attack was repulsed. The Germans thrice attempted to resume the attack, but each time the devastating trench mortar fire barred their way to Nazarovka. In the end they abandoned the attempt and left 600 Germans killed and about a dozen shattered tanks on the battlefield.

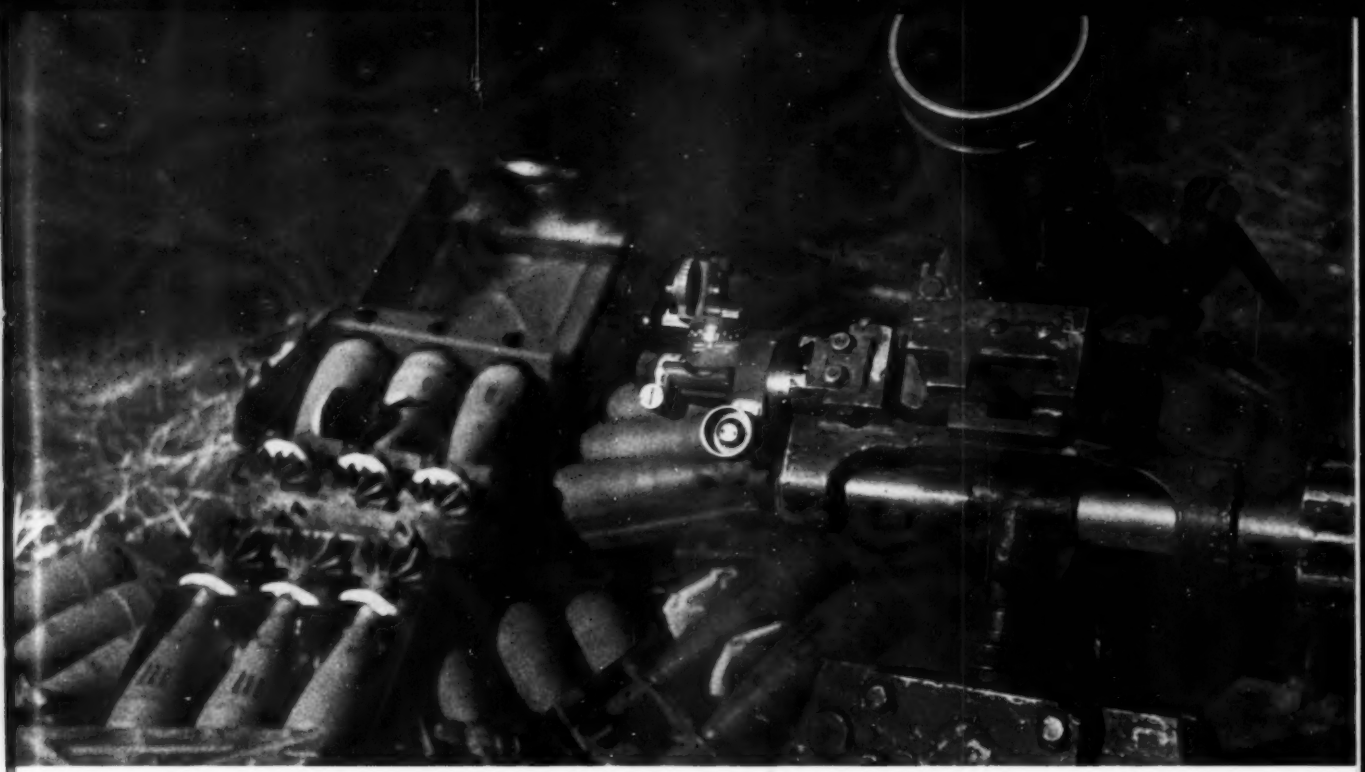
The qualities chiefly demanded of trench mortar gunners are persistence, coolness, and the ability not to betray themselves until the enemy comes within striking distance.

Here is an instance. The trench mortar unit commanded by Senior Lieutenant Butkevich was defending the outskirts of the town of Khoroshkovo when the Germans attacked. The Germans advanced in a column. The trench mortar gunners waited patiently until the Germans came within range of where their fire would be most devastating. Then at a given signal, several dozen mortars belched bombs which burst in the very thick of the German column. The Germans were taken by surprise. Over 300 of them were killed, and the attack was foiled.

The other day the Germans attacked a certain inhabited place, but were detected by Soviet mortar gunners who opened fire. The bombs burst in the midst of the enemy's infantry with a devastating effect, but they pressed obstinately forward. Several times they were forced to drop to the ground by the intensity of fire, but again rose and advanced in spite of heavy losses. They had already approached within 50 meters—the range within which trench mortar is ineffective because of its angle of elevation. Several mortar layers, however, continued their fire. They held the mortars in their hands although they ran the danger of being struck by splinters from their own bombs. Their hands were lacerated by the recoil, but they persistently kept firing. Their fortitude and courage won the day, and the attack was beaten off with great loss to the Germans.

Uninterrupted contact must be maintained between the infantry and trench mortar units, so that at the needed moment, the services of the latter may be called upon to destroy the attacking enemy by massed fire.

*Courtesy, The Soviet Embassy.



Red Army soldiers examine captured German 81mm mortar and ammunition. Current German allotment of these heavy mortars is six per machine gun company, eighteen per regiment. The close-up clearly shows the elevating and traversing mechanism of the mortar.

Setting out for the advanced line is Soviet sniper Faronov, one of Russia's ace snipers. He has shot 136 German officers and men, taken 7 prisoners and destroyed one tank. Notice the telescopic sight on his gun.

Small Patrols Wreak Havoc*

By Captain M. Sedyakin, Red Army

THE German defense positions in a mountainous region usually consist of a series of support points scattered along tactically important heights. Each one of these heights is surrounded by a system of machine gun nests and trenches for submachine gunners.

This is a typical all-around defense system. The German is rather sensitive to blows from the flanks and the rear, and small groups of submachine gunners can always infiltrate between the heights and attack the enemy communications.

On one occasion Lieutenant Mokritsky was ordered to blow up three bridges on the road along which the Germans were constantly bringing up reinforcements and supplies. The importance of this operation was increased by the fact that the attack was imminent in that area.

After carefully studying a map and questioning local inhabitants Lieutenant Mokritsky laid out a proposed route. Before the day set for the operation Mokritsky and three men made their way close to the bridges, and from a distance of a few hundred meters made a thorough examination of the terrain and location of the sentry posts.

Having approached the furthest bridge Mokritsky directed one of the men to move some distance off and fire the submachine gun a few minutes later. The man did so. As soon as the enemy patrol was fired upon, a group of Germans appeared on the opposite side of the bridge and returned fire. Meanwhile, Lieutenant Mokritsky crawled up to the bridge, placed explosives there, and crept back. An explosion was heard; then two more. All three bridges were destroyed.

Although there is no continuous front in the mountainous region, submachine gunners should always be wary. German troops often attempt to infiltrate the Soviet rear, and for that reason submachine gunners should advance with great caution. A two man patrol should move along the path itself and be followed by a nucleus of a group walking through the bushes beside the path. Other two men patrols should move along a parallel route some 70 meters away. Thus, the whole area surrounding the path is virtually combed by patrols. They run from bush to bush, and move on only

*Courtesy, The Soviety Embassy.

after they ascertain that there is nobody ahead.

The nucleus of the group should advance only after they have received the prearranged signal, which may be an imitation of a bird call. No conversation is allowed, for at an altitude of 1,000 to 1,500 meters even ordinary conversation is audible two to three hundred meters away.

As the scout group under Sergeant Kubanets was making its way into the enemy's rear, Kubanets suddently heard footsteps and German speech. He gestured to the scouts to conceal themselves. First, a German soldier appeared; a few minutes later others followed. They walked along the path and stopped every few steps to listen. When they were inside the circle of our submachine gunners, our men opened fire. One German soldier was taken prisoner, the rest killed.

On another occasion, First Lieutenant Golzunov's detachment was ordered to destroy the German submachine gunners who held possession of a height and hindered the movement of our troops. It was known that the Germans had entrenched themselves strongly. All previous frontal attacks had proved unsuccessful. At dawn the scouts reported that on the height there were about two German battalions as well as mortar batteries and one field gun.

It became clear to Golzunov that the only way to destroy the enemy with his weak force was to strike panic in their ranks. He divided his detachment into two parts. The first group was ordered to attack the Germans from the rear and destroy the artillery piece; while the second group, led by the first lieutenant himself, was to launch an attack from the left flank. The right slope was purposely left as a sort of safety-valve for the Germans, who, bewildered by the unexpected attack, would probably fall back in that direction.

At the prearranged signal the first group attacked. The gun crew was instantly destroyed by accurate submachine gun fire. As the submachine gunners defending the gun were retreating towards the summit, they heard firing and loud cheering from the left slope. The Germans lost their heads and, frightened at the possibility of complete encirclement, rushed into the safety-valve. That was the move for which the attackers were waiting. Most of the Germans were destroyed; some fled from the mountain under the heavy cross fire of our men.

Because of the daring accurate plans and fire maneuver, First Lieutenant Golzunov succeeded in dealing the enemy a painful blow without any loss among his men.

Recent mountain fighting has shown that small groups, pairs of snipers, and submachine gunners are steadily enlarging the scope of their activity. They hold the roads and mountain paths under cross fire, await the enemy patiently, and destroy him mercilessly. They may also cause the enemy a great deal of trouble far in the rear. Thus by perfecting the tactics of small groups it is possible to do the enemy even greater harm than by frontal attacks of considerably larger units.

This small detachment is fighting for a village in the northern Caucasus. Notice the three kinds of weapons—machine gun, tommy gun and rifle—used by these men. They are fighting with full pack. An enemy shell is bursting less than 20 yards away.

Frontal Attack

Two outstanding Aces of the Red Army Air Force describe the Soviet practice of "ramming" enemy planes. These daring tactics, developed from personal encounters with the *Luftwaffe*, have destroyed many German planes and pilots around both Stalingrad and Moscow.

As Told to C. Zelin

By Pilot Major I. Tenekov

THERE has never been a case when a German fighter would use the particular form of attack so often resorted to by our Soviet pilots—that of ramming his adversary. These tactics require extraordinary will power and fearlessness.

Up to now (December 30, 1942), only the Russian pilots have made a practice of downing the enemy by hurling their own planes at him, from which maneuver they often escape themselves without a scratch. My experience shows that the Germans cannot grasp the psychology of Soviet airmen who, with courage and coolness, carry out such an operation. One thing, however, that the Germans did learn about ramming was that the Russian pilot usually came out victorious. Perhaps this explains why nearly always in a frontal encounter with the enemy it is the latter who first turns aside.

It fell to my lot to take part in many air fights in various sectors of the front, and not a single case is known to me where our pilot did not emerge victorious when engaged in a frontal attack. Not once have I heard that a German flier had pluck enough to face such a blow.

In a frontal attack it is necessary to catch the right moment to close with the enemy. His psychological reaction is very important, for he must be made to feel the whole weight of the enormous plane rushing down on him. For this reason—as opposed to the usual method of attack—in frontal attack it is necessary to fire some short bursts at the enemy in order to warn him of your presence.

If you are attempting the rescue of a comrade in battle, a frontal attack is a well tried and a sure method. While leading a group of three I-16's I once came up against six Messerschmidt-109's. While one Messerschmidt gained height, the other five were forced by the prompt veering of our planes to accept the battle. The enemy plane that had flown upwards then began to dive on one of our planes from an altitude of 1500 meters. Noticing the danger which threatened my comrade, I immediately veered and directed my plane towards the enemy, ready to deal him a frontal blow. At the distance of 500 meters the German stopped his dive, and by this time, being only 30 to 50 meters from the German, I was able to down his Messerschmidt.

From either a vertical or horizontal position a frontal attack usually brings victory at very close quarters. During the air battle near Stalingrad a Messerschmidt-109 was racing after one of our fighters. Noticing it, I directed my plane to face the Messerschmidt and prepared for a frontal attack. The enemy fell back to avoid my blow, but his plane lurched to the right and he involuntarily came closer. This enabled me to set fire to him at a distance of only a hundred meters.

The frontal attack as practiced by an experienced pilot is a good tactical method by means of which he can carry on the battle even without ammunition. Here is an episode confirming this. After patrol duty two of our fighters led by Captain Vasin were on their way home. Neither the Captain nor his companion had any ammunition left. Above the airdrome they were attacked by two Messerschmidts, and for twenty-five minutes before our very eyes Captain Vasin and his companion fought and charged the enemy. Neither veering nor using any special maneuvers, Vasin turned his plane, lifted it to face the enemy, and showed his readiness for a frontal attack. This German could not face the frontal attack and retreated to higher altitude to dive again, but Vasin repeated his maneuver. Without firing even one shot our airmen won the battle and the Germans retreated.

Experience has shown us the great strength of a frontal blow in an air battle. These tactics, however, require courage and resolution of the fighter to an extent that, as a rule, the German airmen have not displayed.

★By cable from Moscow. Courtesy, The Soviet Embassy.

In Air Combat

By Major N. Denisov*

IN air combat the situation changes rapidly. It often happens that, through an enemy maneuver or the arrival of enemy reinforcements, a fighter plane runs out of ammunition in the presence of hostile planes. Under such conditions Soviet fliers never give up the battle. They have always at their disposal one tactic in which they are far superior to the enemy—ramming.

This new method of air combat has become common on the Soviet-German front. It is difficult to establish who was the first Soviet flier to use it in action. Several cases were recorded on the very first day of the war, June 22, 1941, when the German fascist army treacherously attacked the Soviet Union. Here is one illustration:

A large formation of German bombers appeared suddenly over a Soviet airfield. Although the attack was a surprise, several Soviet fighter planes managed to get into the air. One machine was piloted by Lieutenant Butelin, who by skilful flying shot down a German plane and set another on fire. The German planes were in retreat and Butelin was pursuing them when he ran out of machine gun cartridges and shells. The brave Soviet flier dived at the enemy bomber and hit it squarely. The German plane exploded.

Ramming does not necessarily imply wrecking an enemy plane by a direct blow delivered with the whole impetus of one's own machine. The modern air ramming maneuver is based less on the impact of the attacker's plane than on his flying skill and ability for subtle maneuvering in complicated situations. Soviet fliers distinguish three types of ramming. The first and simplest—but also most dangerous for the attacker—is the direct blow at the enemy plane with one's own machine.

Less dangerous but producing similar results is the second method—hitting the enemy plane with some part of one's own plane. Most often this means clipping the enemy's wing or tail with one's own wing.

The third method, requiring great skill, is not to ram directly, but merely to bring the planes into slight contact for a moment with the attacker's propeller cutting into a vital part of the enemy's fuselage. Many Soviet fliers have mastered this method and have used it to down a number of enemy planes.

It must be pointed out that in the overwhelming number of cases on record enemy planes have been rammed while being pursued from the rear. It is practically impossible to cut down an enemy plane with one's own propeller by a frontal or side attack. The phases of a ramming attack from the rear are as follows:

1. The attacking flier overtakes the enemy and adjusts his speed to equal that of his target. This phase is described by Captain Andreyev, commander of a Soviet fighter squadron on the Southern Front. It was his second successful ramming. "When I decided to ram the Junkers I brought my plane up beside and slightly behind it. I adjusted my speed to equal the bomber's speed and slowed down my propeller to reduce the number of revolutions. I did this to make sure the propeller would not jam as it struck."

2. The next phase is the act of cutting into the enemy plane with the propeller. The most important thing is to pick the spot on the enemy plane which the propeller is to strike. Soviet fliers most often aim for the tail assemblage, but are always prepared, if circumstances require it, to strike at some other part—wing rib, fuselage, etc. The crucial moment is too brief to enable the attacker invariably to strike the selected spot. A flier's own judgment and skill in maneuvering will suggest the best solution in each case.

Lieutenant Katrich, who rammed a German plane during a raid on Moscow, relates: "While gaining fast on the bomber, I sheered off to the left and then aimed my plane at the tail group so as barely to touch the stabilizer and rudder with the tip of my propeller. My calculation proved correct. As soon as I felt a slight shock I shut off my gas and dropped away to the side. The German bomber fell like a stone."

3. The instant of striking with the propeller is followed at once by the ramming's third phase, which is extremely important—dropping away to the side. If the attacking flier is too slow his plane may become entangled with that of the enemy and be dragged to the ground. If he drops away too soon, the attack may be unsuccessful. As in all his actions, the attacker must show a flying sense which tells him at exactly what moment to drop away.

The above mentioned Captain Andreyev continued his account as follows: "When my propeller, by a slight touch, cut the bomber's wing rib, I became aware of the hit by some inner sense. Immediately I dropped off to one side. It was none too soon, for the enemy machine went into a spin from which it never recovered. My plane was undamaged. Only one propeller blade was bent. Soon after I landed safely at my field."

A remarkable point is that in the overwhelming majority of rammings, Soviet fliers escaped unscratched while bringing down the enemy plane. Their planes usually suffer no serious damage. As a rule repairs are limited to replacing propellers or patching up surfaces, after which the planes are again ready for battle.

*Soviet Embassy Bulletin.

Combating German Parachutists*

German troops learn to "bail out" from a tri-motored plane at the Stendal Parachute Jumping School. Lessons learned by parachute troops were first put to use as the Nazis began their invasion of Holland, Belgium and Luxembourg in 1940.

ON the Don and in the Northern Caucasus, during the summer of 1942, the Germans made repeated attempts to land parachutists and air-borne troops in the rear of the Red Army units.

The tactical objectives of such landings are always limited—attacks on river crossings, inhabited points, railroad stations, road junctions, etc. The parachutists are usually landed in the direction of the main blow, twelve to twenty miles from the front line—sometimes nearer.

No attempt was made to conduct large scale landing operations as in Belgium, Holland, and on Crete, although the flat, prairie-like country of the Don and Kuban regions would seem a favorable terrain for such operations. The explanation is that apparently the German parachute units and air-borne troops are still feeling the effect of extremely heavy casualties inflicted on them during the 1941 operations. The Soviet aviation was also very active and successful in bringing down German transport planes.

The tactics of German parachute troops are very flexible, and always well adapted to circumstances. Whenever possible, German parachutists attack the objective from several directions simultaneously and try to encircle it. If their numbers are insufficient for a determined attack, they usually try to secure a flat stretch of terrain near the objective, which can be used as a landing field, and then go on the defensive until a sufficient number of air-borne troops is landed by transport planes. Sometimes parachutists are landed in small groups of five or six men at different places. These groups stealthily assemble at a predetermined point, and then swing into action.

A tenacious and well organized defense as a rule succeeds in paralyzing even the most intensive effort of the parachute troops. Following are a few examples of such engagements which took place during the 1942 summer fighting in the Don and Kuban districts.

A Soviet rifle regiment successfully defended for four days an important boundary, repulsing constant enemy attacks. On the fifth day the Germans, launching a strong attack on the right flank of the defenders, unexpectedly landed a small group of parachutists with automatic rifles behind the left flank. From the rear, the group attacked the battalion defending this sector and thereby unexpectedly created a critical situation. Without a moment of delay, the regimental reserve was thrown into a counterattack. The parachutists suffered heavy casualties, the remainder were captured, and the boundary successfully held. Had the countermaneuver been less swift and determined, the outcome would have been entirely different.

On other occasions, landings were made in considerably greater strength, but never sufficient to de-

*Translated from *Pravda*, Aug. 25, 1942, by N. Corotneff.

velop into an important operation of more than local tactical significance.

On one of the sectors of the southern front the Soviet units, slowly retreating before the considerably superior German forces, were attacked from the flank by German tanks, which forced a river crossing and cut the railroad line running to the rear. To create an impression of complete encirclement, the Germans landed several parachute groups twenty-five to thirty miles to the rear, each about one hundred men strong, with machine guns and light mortars. Some of these groups even succeeded in landing a few light tanks. The parachutists began to advance along the main roads and tried to create an impression that a complete encirclement by strong German ground forces was being effected.

A swift and thorough aerial and land reconnaissance established the fact that, in reality, the encirclement forces consisted of only a few parachute groups. Mobile reserves were immediately thrown into action, and the parachute units were gradually liquidated.

In dealing with parachute landings the most important requirement is speed. It is essential to localize the group immediately, before it has had time to acquire strength by additional landings and then to spread out. Therefore they must be attacked without any loss of time. If the parachute troops succeed in organizing an effective fire system of small automatic arms, machine guns, and mortars, then the regimental and divisional artillery and tank units are drawn into action. The fire system of attacking troops should preferably be semicircular, and the antitank guns should always be placed between the parachute troops and the front line, as there is always a likelihood that a German armored spearhead will try to break through the front and come to the assistance of their parachutists. The artillery must be able to shift the fire quickly in case more attempts to land are made in other places.

It is useful to have special divisional or army corps formations held in readiness to combat parachute troops. They usually consist of tank units—from a platoon to a company—and carry, in addition to their usual crews, groups of automatic riflemen. These formations, flexible and quick-moving, are used to reinforce the troops on whose sector parachute landings were made.

In several instances during the battles for the Don and Northern Caucasus, the Germans landed air-borne troops after parachute troops had secured a suitable boundary. Transport planes then landed automatic riflemen, light and heavy mortars, antitank guns, and motorcycles. Almost invariably the landings were effected at dusk. Under cover of darkness the Germans would immediately start to dig in and to organize a strong fire system. In such cases counteraction must be

German sources say that this picture shows Nazi parachute troops landing in snow-covered rock ledges to reinforce the German garrison in Narvik. This was during the Battle for Norway in 1940.

taken at once, as it is imperative that such a landing be liquidated overnight. Any procrastination is extremely hazardous because the group may be reinforced by new landings during the night, at dawn, or early the next day.

To minimize this danger, fighter planes must constantly patrol the sector, keep a lookout for new landing attempts, and coöperate with ground forces, as the German aviation usually attempts to support their air-borne forces after landing. To maintain a sufficient aerial strength in the critical area is therefore most important.

All in all, the experience of the summer of 1942 proved conclusively one thing: a tenacious, disciplined and well organized defense—alert, flexible, and quick-moving—will always get the best of the parachute troops and eventually liquidate them.

Tank Communications in Battle

By Colonel M. Khotimsky, Red Army

FIGHTING in the Southern Sector of the German-Soviet Front is characterized by exceptional ferocity. The large number of tanks used in this fighting are often in action for several hours at a time, and with artillery and aircraft working in close coöperation, very competent handling of these tanks is required. Recent fighting has shown that the Germans have considerably increased their antitank defenses, so that tanks must be employed skilfully and with a view to decreasing the losses.

Practice has frequently confirmed the advisability of putting heavy tanks in the first echelon, mediums in the second, and then the light tanks. This formation considerably reduces losses and brings better results.

Tanks give the best results when employed en masse. This decreases the losses and achieves success in battle. Success, however, can be achieved only with reliable help from the artillery, aircraft, and infantry. When employing massed tanks the commander must have at his disposal a strong control of the center, by means of which he can maintain constant contact with his tanks and maneuver them one unit at a time and thus make the greatest possible use of each minor unit.

Until now radio has been almost the only means of communicating with tanks and directing them in battle. Experience has taught us that radio stations frequently break and become useless. A recent example of this occurred when several dozen tanks were sent into action but towards the end of an encounter communication and control of the tanks had to be maintained through one single station. Since then the tank commander's control center has included two or three light tanks which the commander uses to carry orders and information to tanks in action. At the same time these light tanks form protection for the headquarters as well as for the commander in the event that his tank is knocked out or that the enemy makes a flank attack. In order not to disclose the whereabouts of the commander to the enemy, tank units advance in open order behind the machines which flank the commander's tank.

Another lesson learned from experience is that the control center must have at its disposal, in addition to radio, tank field communications of the type used by the battalion. For this purpose the motorcyclist with a telephonist is sent forward, behind the attacking tank units. He has two or three kilometers of cable with him and a telephone. Taking up his position near the scene of action, he then maintains communication between the observation post and the commander of tanks in the field. As the tank unit advances, this signalman advances with it.

In tank units, as in all other arms of service, the observation post must be in the vicinity of the scene of action. At the observation post there is usually a group of staff commanders who conduct the operations. At their disposal they have a tank. Following the course of action, this group notes where enemy resistance is stronger or weaker. Timely information is sent to the commander, and this forms the basis of his further decisions. This staff group, when necessary, calls for the assistance of artillery or aircraft. Such an observation post is reliable aid to the commander in the field.

It is very important that evacuation facilities should be well organized in the tank units. The commander's assistant in technical matters, or a representative of this commander is usually at the observation post. He organizes the evacuation of damaged tanks and such repairs as can be carried out in the vicinity of the battlefield. We have many instances of damaged tanks returning to fight the same day that they were disabled.

Vehicular Reconnaissance

*By Lieutenant Colonel Brainard S. Cook, Cavalry**

Men from the fighting fronts stress the value of thorough reconnaissance. It cannot be emphasized too strongly. A battle or a campaign may depend upon it.
Every officer with a reconnaissance unit—troop, squadron, company battalion, or regiment—will profit by a careful study of this article.

FOREWORD

THESE notes, prepared for the purpose of giving reconnaissance commanders some clear simple guides on which to base their action under various circumstances, are not to be taken as blind dogmatic rules without flexibility. These rules are set down here to increase the reasoning power of any individual who will have to conduct or train troops in reconnaissance missions.

RULE NO. 1. ALL RECONNAISSANCE IS OBTAINED BY A CONTINUOUS OPERATION OF MOVEMENT AND OBSERVATION.

It is foolish to assume that thorough observation can be obtained while in motion. Movement must be fast, accurate, and based on a preconceived plan. In situations where contact is not immediately eminent, observation may be somewhat subordinated to movement. However, as contact becomes more and more eminent, observation becomes the ruling factor, and movement becomes subordinate to it. Movement is then undertaken only after thorough observation has been accomplished.

Observation must be systematic and follow a general rule: *i.e.*

1. Use field glasses whenever possible.
2. Observe from a covered position.
3. Dismount if vehicle is unsteady.
4. Search ground closest to your position first.
5. Start your search on the left at close range and search in a semicircle to the right; then move to the next higher range and search back to your starting point.
6. Whenever possible, use two men to observe. Let one watch the general terrain to detect any unnatural movement while the other conducts a systematic search with the use of field glasses.
7. Utilize every available terrain feature that might afford an opportunity for observation of the routes or ground that lies ahead or to your flanks.

Movement must be planned well in advance and executed with decision; *i.e.*, during the process of observation prior to the next move, that move must be uppermost in the mind of the commander. He should search the terrain in front with a view to finding possible traps, cover, side roads, methods of approach to cover, and possible avenues of withdrawal to cover and concealment if fired on. During the actual move he must be constantly on the alert for terrain features that will be favorable to his forward movement and yet keep in mind the terrain features that will afford him the maximum protection that he might need in a hasty withdrawal.

RULE NO. 2. IT IS ESSENTIAL IN ALL RECONNAISSANCE THAT ALL ROUND OBSERVATION BE MAINTAINED AT ALL TIMES EVEN IN THE SMALLEST UNIT.

This can be accomplished only by prearranged assignment of observation sectors to crew members of a vehicle and in larger units to certain specified elements of the command. When these assignments are made the position of individuals in the vehicle or the position of the vehicle in one column must be considered. Obviously it would be incorrect to charge the leading vehicle with observation to a flank only, and to assign the number two vehicle in column with observation to the front. A good rule to follow is, after designation of the point and point-support, to assign even-numbered vehicles with observation and reconnaissance to the right, and odd-numbered vehicles with observation and reconnaissance to the left. This rule can be extended to the platoon by assigning sections according to numbers and using the support section for rear observation. In all cases the rearmost vehicle is responsible for observation to the rear.

These assignments must remain in effect at all times

*8th Reconnaissance Squadron.

and must be especially effective when the unit is halted. They constitute the basis upon which outpost security is established.

In many cases the size of the unit will necessitate the assignment of dual observation missions to individuals or to vehicles. This should in no way decrease the quality of observation obtained but will in most cases decrease the speed with which the same area might be covered by a large force.

RULE NO. 3. DO NOT REGARD ANY INFORMATION OF THE ENEMY AS TRIVIAL BUT SEND IN EVERYTHING YOU CAN FIND OUT ABOUT HIM.

The job of a reconnaissance element is collecting information, not evaluating it. In the process of this collection it will sometimes be necessary to evaluate information gained in order to establish priorities on the messages that you send back. The *what, when, where,* should have priority over everything you have learned. If the air is jammed and your message is highly involved with a lot of technical data the chances are nine to one that the what-when-where part of it will be lost in the shuffle.

A good rule to follow is to send the what-when-where part in one complete message, and follow with the remaining data in another separate message. The other data may be vitally important in completing the picture back at headquarters, so do not neglect to send it in.

RULE NO. 4. RECONNAISSANCE VEHICLES WORK IN PAIRS. ONE COVERS THE ADVANCE OF THE OTHER AND RECONNOITERS, WHILE THE OTHER STANDS GUARD READY TO COVER THE WITHDRAWAL OR TO ASSIST IN THE ATTACK. ONE LIES IN WAIT AND WATCHES, WHILE THE OTHER FEELS OUT THE FLANKS.

Remember that a vehicle caught by surprise fire is more than apt to be slightly confused in the first few moments. It is here that the reassuring fire of the supporting vehicle is like a breath of cool air to a furnace stoker. It is like the shout, "We're on your side; stay in there and pitch and we'll get you out."

Remember, too, that an unsuspecting enemy who sees a perfect target will concentrate on it and will be considerably surprised if his first burst of fire immediately draws fire from another source. The resulting confusion will allow the advancing vehicle to collect its wits and scoot to cover.

Whenever possible the reconnoitering vehicle moves by a wigwag route to avoid the possibility of continuous tracking by enemy gunners. The covering vehicle or vehicles train their guns on the most likely spots from which to expect enemy fire. The crews of the covering vehicles observe the terrain from which fire is expected and *not* their own reconnoitering vehicles. This is a common fault and must be corrected early in training.

One member of the reconnoitering vehicle must be on the alert and keep close watch to the rear for signals from the supporting vehicle. The supporting vehicle is usually on commanding ground and will be more apt to see an approaching enemy.

The covering vehicle stays under cover and makes no move that might disclose its position.

These duties should be interchangeable, and vehicles and crews should be trained to operate as both point and point-support so that one vehicle does not carry the burden of reconnaissance at all times.

The greatest crime that a supporting vehicle can do is to let the reconnoitering vehicle down when the supporting fire is needed.

RULE NO. 5. IN AN ADVANCE OVER OPEN TERRAIN WHERE NO COVER FOR THE RECONNOITERING VEHICLE IS AVAILABLE IT IS ADVISABLE TO USE TWO OR MORE VEHICLES ADVANCING OVER DIFFERENT ROUTES AND AT DIFFERENT SPEEDS COVERED BY TWO VEHICLES FROM THE REAR.

When the leading vehicle reaches terrain of this nature he must immediately notify the following vehicles and be prepared to direct them to places of vantage from which they may cover the reconnoitering vehicles. This should not call for an assembly of all vehicles nor a council of war, but should operate on a preconceived plan with the supporting vehicles moving into position with the full knowledge of their part in the operation and complete understanding as to the method used in the advance. After leading vehicles have gained cover on the forward side of the open terrain, the support vehicles should move forward, each covered by the remaining vehicle. A reassuring signal from the leading vehicles would call for a rapid advance from the supporting vehicles. No signal should be a sign for caution and the advance should proceed just as if the two leading vehicles had not already gone forward.

RULE NO. 6. AN APPROACH TO A QUESTIONABLE VILLAGE OR TOWN SHOULD BE MADE OVER COVERED ROUTES FROM DIFFERENT DIRECTIONS AND UNDER THE SAME METHOD AS THAT USED IN MOVING OVER OPEN TERRAIN.

Frequently it will be necessary for the leading vehicle to advance to the closest cover near the town and then dismount its crew for further reconnaissance on foot. If the village is in enemy territory a reconnaissance by fire is sometimes advisable. In this event the firing vehicle should be covered by one or more supporting vehicles which will not disclose their positions but will be prepared to return any fire delivered in order to develop the resistance within the town. When a position is selected to cover the advance of a reconnaissance vehicle, care must be taken in the selection of the covering position. On many occasions a well placed smoke screen will nullify the fire of a strongly held village. Thus when the covering position is selected the wind, range, field of fire, cover, and nature of the village must be taken into account. Mortars and grenade shooters should be placed well forward in order that extreme ranges may be used for the initial

firing so that corrections may be made from covers to avoid the hazard of firing too close to the reconnoitering vehicles. Reconnoitering vehicles when fired on should withdraw to the flanks in order that the field of fire may not be masked for the supporting vehicles.

RULE No. 7. RECONNAISSANCE UNITS ENGAGED IN ANY TYPE OF MISSION SHOULD BE PREPARED AT ALL TIMES TO GIVE A COMPLETE RUNNING REPORT OF TERRAIN OVER WHICH THAT UNIT OPERATES OR OF ENEMY CONTACTS EITHER BETWEEN THE UNIT ITSELF AND ENEMY FORCES OR BETWEEN ADJACENT FRIENDLY FORCES AND THE ENEMY.

Terrain features cover the following:

1. Routes and bridges, their types and condition, and permissible loads.
2. Location of suitable landing fields.
3. Location and condition of communication systems, both military and commercial.
4. Location of contaminated areas.
5. Location and type of supplies, both civil and military. (Particularly gas, oil, and subsistence.)
6. Location of high points and the routes thereto.
7. Location of railroads, spurs, switches, crossings, turn-tables, repair shops, and rolling stock.
8. Location of streams, containing depth, width, and current, and possibilities of crossing same by means of available boats and rafts.
9. Location of shoreline, beaches, wharves, and docks with estimated capacity of warehouses and ships that might be in the harbor.

Enemy contacts should cover the following:

1. Location, time, and direction of movement of first hostile contact.
2. Movements, contacts, and observations, gathered from visits to friendly troops that might not be reported because of poor communications.
3. Movements of friendly troops that might be cut off from their own headquarters.
4. Movements, transports, troops, vehicles, etc., that might be gleaned by questioning natives.
5. Location, type, and direction of movement of hostile aircraft as they appear.
6. Each message regarding enemy troops should include:
   a. What it is.
   b. Where it is.
   c. What time it was noted.

RULE No. 8. UNITS AVOID COMBAT EXCEPT WHEN NECESSARY FOR THE SUCCESS OF THEIR MISSION. A RECONNAISSANCE UNIT SHOULD NOT ENGAGE IN COMBAT WITH AN ENEMY RECONNAISSANCE UNIT OF SIMILAR SIZE IF IT'S MOBILITY ENABLES IT TO SIDESTEP THE INTERVENING RESISTANCE.

It must be ever kept in mind that the location, disposition, size, and direction of movement of the enemy force most likely to interfere with the mission of the parent unit is the objective of the reconnaissance unit. Small reconnaissance forces of the enemy should be reported and left to the counterreconnaissance screen established by the larger units. The mission of any reconnaissance unit is to observe and report. Any time that is lost in small engagements with hostile reconnaissance elements is time lost in accomplishing any major reconnaissance mission. The mission is the main body behind these small reconnaissance elements.

Armored force units usually advance with air observation well to the front and are followed closely by reconnaissance in force, which are in turn immediately followed by motorized infantry. Normally, reconnaissance units are not capable of either stopping or delaying the advance of armored elements, but it must be remembered that the width of the advance of armored elements is comparatively narrow and subject to the conditions of the terrain. A prompt move to the flank will often afford complete observation of the armored unit as it passes and will leave the reconnaissance unit available for observation on the infantry column that follows. If the armored attack is sensed in time it will often be possible to fall back in front of it and not be cut off but still keep it under observation. By closing in on the flank of the enemy's reconnaissance in force, a reconnaissance unit will find that it will be possible to eliminate some of this screen and penetrate it for observation on the main force. An armored attack discovered in time is one that can be foiled. Remember, too, that reconnaissance screens usually cover the assembly of the armored units prior to an attack. Artillery fire can be brought on that assembly position if you can report it accurately. To get this information it will be necessary to penetrate this screen.

Counterattacks should be launched only to relieve an element of the reconnaissance who has stumbled into an ambush. A swift, deftly executed attack will in most cases demoralize the enemy to the extent that the involved element may break off and rejoin the reconnaissance party. These attacks should never be launched as frontal attacks, but every effort should be made to maneuver to the flank and bring flanking fire on the opposition.

On occasions it will sometimes be necessary to reduce a defended road barrier. In this instance it will be necessary to place the support section for frontal fire and maneuver to the flank with the remainder of the command in order to effect the flanking fire. The flank attack must move with speed and silence and must be launched in time to take advantage of the element of surprise.

RULE No. 9. IN THE VICINITY OF THE ENEMY RECONNAISSANCE ELEMENTS, MAINTAIN SUFFICIENT DEPTH TO MINIMIZE THE EFFECTS OF HOSTILE FIRE.

This rule is obvious if attention is paid to the fact

that each vehicle must advance under the cover of another. This entails movement by bounds while covering vehicles remain under cover until the point of reconnoitering vehicle has reached the next bound and signalled "all clear." A bound might be described as the distance between successive positions from which fire might be delivered to the front. This distance will vary greatly according to the nature of the terrain but should not exceed 700 yards. Once the point vehicle gets beyond 700 yards from the support vehicle, it is out of supporting distance of small arms fire. If bounds are greater than 700 yards apart they must be considered as a series of open terrain features and the advance governed accordingly. The covering vehicle must always maneuver into a position for support that will not be masked by the advancing vehicle. This necessarily calls for high ground for the covering position, or if high ground is not available the covering vehicle should be situated well to the flank.

In an advance across desert country where overhead cover is sparse the advance must be greatly dispersed and every terrain feature that tends to force the unit into a column formation should be avoided, or if unavoidable, should be negotiated by infiltration of vehicles.

Defiles are particularly dangerous for vehicles and should be avoided when possible. If not avoidable, covering vehicles should be placed on the top of the defile while the remainder of the unit advances through infiltration. All possible speed should be made while in the defile and under no circumstances should the enemy be allowed to catch the entire unit in the defile at the same time.

When the next bound has been reached and the all clear signal is received, it is not necessary for supporting vehicles to advance cross-country, but they should take the shortest direct route ahead and move up promptly so that no delay will be caused.

RULE NO. 10. TO FACILITATE OPENING IMMEDIATE FIRE WHEN OPERATING IN CONTACT EMINENT FORMATIONS ALL CARS WILL KEEP THEIR GUNS TRAINED ON THE MOST LIKELY POSITIONS FOR POTENTIAL TARGETS.

This rule is self-explanatory. It calls for continuous alertness on the part of all crews and quick action on the part of all gunners. Machine guns are usually transported at half load. Rifles are loaded and locked and pistols are carried with safety on but ready for immediate action. Thirty-seven millimeter guns will be loaded and ready for instant fire. Mortar ammunition will be kept instantly available.

RULE NO. 11. EVERY MEANS AVAILABLE FOR MAINTAINING CONTACT WITH EACH HIGHER HEADQUARTERS WILL BE USED. IN ADDITION TO RADIO AND MOTORCYCLE MESSENGER THESE WILL INCLUDE COMMERCIAL TELEPHONE, COMMERCIAL TELEGRAPH AND VISUAL SIGNALS. FRIENDLY MILITARY TELEPHONES WILL BE USED WHENEVER POSSIBLE FOR THE TRANSMISSION OF IMPORTANT INFORMATION.

It must be constantly borne in mind that the information obtained by a reconnaissance unit is of no value until it arrives at the headquarters and in the Intelligence Section that must use it. When communication with intermediate echelons of command is out, reconnaissance patrols should have no hesitancy in attempting to get vital information through direct to the headquarters that must use it . As soon as communications are established you should confirm your previous message. The methods used in sending information to the rear depend to a great extent on the importance of the message. If radio communication is out and motorcycles all gone, vital information in the hands of the reconnaissance party calls for cool farsighted judgment on the part of the commander. Is the information vital enough to warrant the sending of one of his organic vehicles? The decision is his and he must make it promptly without hesitation. On the one hand he will reduce his strength by one combat vehicle; on the other, the failure to get this information back to headquarters may result in complete failure of the plan of a division. *Get your information back in time to do some good.*

Remember, too, that positive information of the enemy is not the only thing that higher headquarters is interested in. Negative information is just as valuable.

If you have advanced to a certain point along a certain route and have encountered no enemy, that information is important and should be sent in. Your position is of vital concern to your immediate commander, and it is your duty to keep him informed.

RULE NO. 12. CONTACT ONCE GAINED MUST BE MAINTAINED.

Subsequent movements of an enemy force of any size are of vital importance to the higher commander. Once the main body of an enemy force has been contacted, that force must be kept under constant surveillance until it is committed to its final action. This is especially true in the location of enemy reserves in battle reconnaissance.

A force that suddenly changes direction after it has proceeded along a well defined route for a considerable time, indicates some change in the enemy's plans, and if that change in direction is made while contact is lost this information may never get back to higher headquarters in time for the commander of your own forces to make a counter-move to meet the expected threat from a new direction.

In all delaying action or withdrawals in which you keep the enemy force under observation, pay particular attention to road formations that allow him the choice of direction and so arrange your forces that if he does make an unexpected change you will not be caught off guard. Remember he may keep pushing you back with

just sufficient force to make you withdraw, while the remainder of his force turns off and proceeds in a new direction.

Constant liaison between adjacent patrols will often aid in keeping enemy forces under surveillance when he crosses from one sector to another.

At night when enemy forces go into bivouac constant contact may be maintained by the use of small dismounted patrols that remain in the vicinity of the bivouac. A bivouac area should be reported immediately, and any movement throughout the night of any importance should be reported.

The arrival and departure of convoys and supply trains should be reported. The exact time of departure and the direction of movement on the following morning is of vital importance.

Remember, the general rule is: Bivouac at dusk, rest and replenishment of supplies before midnight, movement immediately after, assembly before dawn, and attack at dawn. Armored forces usually move into assembly positions during the night and launch their attacks on the following morning. A prompt report on that assembly position will usually result in the attack being considerably broken before it is launched.

RULE NO. 13. MAINTAIN CONSTANT LIAISON WITH THE UNITS ON YOUR RIGHT AND LEFT AND KNOW WHERE THEY ARE AND WHAT THEY ARE DOING.

Lateral liaison, although extremely important, is sometimes a matter of minor concern to reconnaissance commanders. This is the only method known to prevent gaps appearing in a reconnaissance screen. An open gap in a reconnaissance screen, like an open gap in a firing line, is a perfect invitation to the enemy's counterreconnaissance elements to push in. Flank your reconnaissance patrols and eliminate them one at a time.

This cross-liaison is greatly facilitated by the use of phase lines. Phase lines are lines drawn through well defined points on the map and on the ground at which point certain elements of a reconnaissance patrol may be contacted at a certain specified time. Only in exceptional circumstances should a phase line be construed as limiting the forward movement of reconnaissance patrols. Higher headquarters may sometimes assign a limit beyond which reconnaissance patrols may not move without further orders. In the event that this is done, the reconnaissance patrol, when it reaches this phase line, becomes a reconnaissance screen, and constant patrolling along this limiting phase line is indicated. The normal function of a phase line, however, is to provide a point for adjacent patrols to contact each other.

Let us take a typical example. Patrol "B" is moving towards a 9:30 phase line; Patrol "A" is on his left, and Patrol "C" is on his right. He has contacted Patrol "C" at the 8:30 phase line and now he wants to establish contact with Patrol "A." A glance at his map will show him where elements of Patrol "A" should be at 9:30. Prior to 9:30 he dispatches his contact patrol to give them time to arrive at Patrol "A"—9:30 phase point at 9:30 or just before. If Patrol "A" has reached his phase line and has not been delayed, some element of his command should be on that phase point at 9:30. If he has reached his phase line ahead of time he should not stop and wait with his entire patrol but should leave a contact patrol there to wait until 9:30. The normal assumption then is that if the contact patrol from Patrol "B" does not find anyone on "A's" phase point, he must assume that Patrol "A" is slow and has not reached his phase line. He immediately notifies his own patrol commander and starts searching back along "A's" route to see what has happened to that patrol. Upon receipt of this message the commander of Patrol "B" immediately reports the fact that Patrol "A" has not reached 9:30 phase line and asks for instructions.

A brash forward movement to the next phase line might throw his left flank open to attack. While holding his patrol in check, he must constantly patrol to the front and flanks to be sure that enemy forces are not pushing through on either side of him.

Lateral liaison may sometimes be accomplished by radio and save much wear and tear on the patrolling vehicles. In any event whenever a patrol reaches a phase line and passes over, that fact should be reported to the next higher command.

The fact that you are operating on the flank of another unit not a part of your organization does not relieve you of the burden of lateral liaison with that unit.

A reconnaissance patrol sent out on a flank of a larger unit should immediately contact the commander of that larger unit, state his mission, and make the necessary arrangements for future contacts.

The commander of a reconnaissance patrol sent out to relieve another patrol should immediately contact the relieved commander, secure information as to what patrols are on the right and left and send out contact patrols to them in order to maintain the continuity of the plan.

RULE NO. 14. IN ANY FORWARD MOVEMENT OF THE PARENT UNIT DEMOLITIONS ARE ACCOMPLISHED ONLY ON ORDERS FROM HIGHER HEADQUARTERS. IN A RETROGRADE MOVEMENT EVERY AVAILABLE METHOD IS USED TO RETARD THE PURSUIT OF THE ENEMY.

In any advance of large forces, bridges, routes, and other avenues of approach are of vital importance to the advancing force. A reconnaissance detachment that destroys a good crossing for the sole purpose of preventing the crossing of a small enemy reconnaissance force is doing more to impede the progress of his own forces than he is to save them from attack. Road blocks may stop enemy tanks, but they will also stop our own. Mine fields may be laid but must be removed before the unit

moves forward on more reconnaissance. All large units have prepared, and ready for issue with orders for an advance, a schedule of demolitions to be accomplished. These are usually assigned to the engineer forces. Such demolitions and barricades as are to be accomplished by reconnaissance elements will be outlined in orders issued, and any deviation therefrom may result in a serious handicap to the following units.

Reconnaissance units are often called upon to effect delay on an advancing force until the units behind can move into position for an attack. In this instance every available demolition possible is accomplished. Telephone lines and telegraph cables are cut, roads blocked, train tracks pulled up and broken, cross-ties burned, fuel and gasoline destroyed, bridges burned or blown up, defiles mined, and all abandoned transportation destroyed.

Bridges, if of wood, are burned to save demolitions. If steel or concrete, part of the flooring and the supports under the center span should be destroyed. If demolitions are available a crater blown into the approach is advisable. If demolitions are not available, concrete bridges may sometimes be effectively blocked by fallen trees thrust through the railings. A washout may be dug across the approach if the stream is swift. Abandoned vehicles may be towed on the bridge, overturned, and set on fire.

In all cases of demolition remember that fire is the most destructive agent because it will continue to work long after the demolition party has been forced to leave the scene. If it can be left so as to burn with sufficient intensity and long enough, it will explode all abandoned ammunition in a tank or car. Gasoline can be ignited by a filled gas bottle capped and equipped with a short piece of long delay blasting fuse, thrown inside the car so as to break.

RULE NO. 15. BEFORE STARTING OUT ON ANY RECONNAISSANCE MISSION BE SURE THAT YOU KNOW:

1. The situation of your own forces.
2. The situation of the enemy as it is known.
3. Your mission and mission of parent unit.
4. The zone in which you are to operate.
5. Friendly forces that will be adjacent to you and their axis of movement.
6. Contacts that you are expected to make with your own forces.
7. Your own axis of movement.
8. How long you will be away from your base of supplies.
9. The initial command post and axis of movement of your highest organic commander and the intervening command posts.

The bulk of this information will be given you in your initial and warning orders; however, you must keep this check list in mind and if all questions are not answered, ask for more information.

The enemy situation and your own situation are contained in paragraph 1, a and b, of all Field Orders.

You should know and constantly keep in mind the main mission of the parent unit. By this is meant the mission of the largest force of which you are an organic part. Your own mission will come in the Intelligence Annex and should include: the size and nature of the forces for which you are to look and report on, the times you are to report, and when the information you are sent for is desired. This should also tell you the zone or routes over which you are expected to operate.

Vehicles, if armed, should have all armament and ammunition removed or destroyed. Where time is available a block of TNT set next to the cylinder block is advisable. Gears may be stripped and axles broken by a sudden shift to reverse while the vehicle is moving forward. Fan belts may be cut and fans demolished with an ax. Spark plugs may be cracked, distributor heads broken, and wiring torn loose. Gas lines should be cut and holes punched in the gas tank; the spilled gasoline should then be ignited under the vehicle. Sand thrown into the air filter will soon be drawn into the cylinders if the vehicle is running. The vehicle may be run off high places by throwing it into low gear and letting it roll forward alone. Stripping gears by reversing them quickly seems to be the quickest method of disabling any vehicle. All military vehicles will be disabled before being abandoned. Tires will burn if a small amount of gasoline is poured over them and ignited.

Machine guns are quickly disabled by removing the block and barrel extension, carrying both for some distance, and disposing of them in different localities. Extra barrels should be inserted into the receiver and their prying leverage utilized to spring the frame. The barrel should then be struck sharply across the edge of the armor plate on the car.

Rifle and sub-machine gun barrels may be bent and rendered useless by striking them across a sharp corner. Remove the bolts and dispose of them later.

37mm guns may be disabled by placing a block of TNT in the breech and igniting the fuse. If fuses and caps are not readily available, the sliding block may be removed and charges placed for detonation by a well thrown hand-grenade after all personnel have left the vehicle. The sight should be removed or destroyed. Abandoned 37mm ammunition can be detonated by TNT or hand grenades.

Mortars, both 60mm and 81mm, may be destroyed by placing TNT charges in the barrel or smashing the barrel with an ax. The sight should be either removed or destroyed.

The reason for knowing the units on your right and left should be obvious. If no arrangement is made for physical or radio contact between you and these elements, try to arrive at some mutual agreement before your departure. In most cases your immediate commander will have taken care of this. If the unit on

your right or left is not directly under the control of your immediate commander, some provision should be made between those commanders for contact.

Before departure you should know the initial command post and general axis of movement of all units through which your messages must pass in order to reach their final destination. As an example, the section commander of a reconnaissance section should know:

Axis of Movement and Initial Command Post of:

1. His platoon commander.
2. His troop or company commander.
3. His battalion commander, if the unit is a part of a reconnaissance battalion.
4. The division commander.

This information is necessary in order that the reconnaissance party may know the headquarters that will ultimately receive and act on the information that he sends in. Command posts are most frequently the objectives of bombing attacks, raiding parties, and armored attacks, and it is more than likely that some or all of your command posts may be inoperative at certain times. Your mission of reconnaissance is not complete until you have delivered your information in the hands of some headquarters that will be able to act on it.

Seldom if ever, will you know exactly how long you will be away from your base of supplies. However, it is your duty to see that your command is as completely equipped for the approximate time as you can possibly make it. *Food, fuel* and *ammunition* are your greatest worries. Be sure you start out completely filled and husband your resources to the utmost.

In other words, you want all of this information so that you may have your command ready to meet the situation that you feel sure will arise and still have enough to spare to meet the unexpected.

RULE NO. 16. UNITS THE SIZE OF A PLATOON OR LARGER SHOULD MAKE PROVISION TO HOLD A MOBILE RESERVE FOR SPECIAL AND UNFORESEEN MISSIONS.

This is a rule that is most difficult to follow because of the fact that in the early stages of development for battle the need for information is so great that every available agency is assigned a mission and in most cases the mission assigned is unduly large.

A wise commander, however, can arrange his sectors and zones so that he may save out a few vehicles of his command to accompany him and thus have them available for special missions. In the platoon this duty will normally fall to the support section. In the troop headquarters, it is seldom that all personnel are needed at all times, and the troop headquarters itself carries sufficient fire power to conduct some reconnaissance on its own. On many occasions it will be found that the requirements of the road net can be met only by assigning a part or all of the troop headquarters an axis of movement that is not covered by one of the platoons.

The normal result of the above should indicate to organization commanders that the troop headquarters should be as well trained in reconnaissance functions as any other unit of the organization. This training is difficult to accomplish because the duties of troop headquarters must be carried on concurrently. The selection of men for duty with troop headquarters should be given much consideration and thought. Their training may be accomplished by staggering their attendance at drill. This calls for a man of special aptitude, for he must absorb his training sketchily and in about half the time normally assigned to the remaining men of the organization.

RULE NO. 17. PRIOR TO DEPARTURE ON ANY MISSION, RECONNAISSANCE PARTIES SHOULD DESTROY ALL NOTES, MEMORANDUMS, MARKED MAPS, AND ORDERS.

This is a counterreconnaissance measure that must not be ignored. Any reference to the movement of units in the hands of a reconnaissance patrol is inviting disclosure of the entire plan.

The reconnaissance man should be able to memorize plans, notes, and movements and should not again have to use notes once he has had sufficient time to look them over. Subsequent notes and messages should be made and kept in abbreviated form with references made only to code names of units and code names of towns.

A revolving template for map reference that can be easily removed and destroyed offers a solution to the coding of names of towns. Telephone code names of units can be memorized and used in subsequent notes and messages.

It is unwise for the reconnaissance unit to carry division codes of any sort. It follows that reconnaissance messages must be sent in the clear. In messages concerning friendly troops some use of code names and template or code grid designations of towns and villages renders a message in the clear unintelligent to the average interceptor. In most cases action mentioned by any reconnaissance unit is current action and will have been completed by the time that the enemy intelligence recognizes and breaks down code designations. Headquarters of larger reconnaissance units may sometimes use code in reference when they communicate with the parent unit, but this is the exception rather than the rule.

Reconnaissance units should not keep an operation map, and the situation map should only show temporary positions. No full detailed maps should be kept. Situation maps should be kept on thin overlay paper than can be easily destroyed or smudged. A handy file for messages and easy access to the template will allow the commander to outline both situation and operation maps promptly if memory fails.

RULE NO. 18. A RECONNAISSANCE UNIT SHOULD BE SO TRAINED THAT IT WILL BE READY FOR ANY RECONNAISSANCE MISSION AT ANY TIME.

To meet the requirements of this statement every in-

dividual in a reconnaissance unit must be assigned detailed duties, instructed thoroughly in their performance, and be capable of performing those duties at any time. Each vehicle has certain equipment that must be loaded before that vehicle is ready for any mission. Each item of this equipment must be catalogued and assigned to some individual in the car crew for loading and replenishing.

When a unit returns from a mission, every man in that unit is to be held responsible that, before he leaves his vehicle, the machine has been serviced; ammunition, rations, fuel replaced; and any worn or broken pieces of equipment immediately turned in and *replaced*. The fact that the article has been turned in does not relieve him of the responsibility incident to his platoon. He must be certain that it is replaced. When a car commander or section leader reports that his car or section is ready to move, that report signifies that he has every article of equipment, all rations, all ammunition, and all extra fuel that is authorized. He also signifies that his vehicle or the vehicles in his section are in good running order and functioning properly.

In addition to the above, provision must be made for expected casualties in the crews and all members must be thoroughly familiar with the duties of other members so that duties may be interchanged.

In moving into bivouac at nightfall each noncommissioned officer must assign places for his men to sleep. He must know at all times where these men are and must be able to alert the entire crew in a matter of minutes. Each platoon leader should assign areas for his sections and should know where he can find each NCO. Each troop commander must be able to locate his platoon leaders. As a general rule outpost duties are assigned to entire vehicles, and the vehicle itself is dispatched to the outpost so that no dismounted men are left in case of a sudden move.

In an alert each NCO prepares his command, then reports to the next senior that he is ready to move.

Each individual upon settling down for the night must learn to place his equipment in certain designated localities around his body so that when he is awakened he can reach out in the dark and place his hands on the equipment as it is needed.

RULE No. 19. ASSEMBLY POSITIONS ARE THE RESPONSIBILITY OF THE RECONNAISSANCE UNIT COMMANDER AND MUST BE DESIGNATED PRIOR TO ACTUAL ENCOUNTERS.

Reconnaissance units are sometimes ambushed and scattered and unless a designated assembly point is set the commander immediately loses control.

A fairly simple rule to follow and one that can be remembered by all concerned is to designate the cross-roads that was last passed over by the unit before the encounter, as the assembly point. This does not mean that every vehicle makes it their business to head directly for the cross-roads and move over to the shortest routes. Neither does it mean that all vehicles drive up to the cross-roads and assemble in one compact group. The first vehicle that arrives should reconnoiter to determine whether the assembly position is held by the enemy. If not, that vehicle should be placed under cover nearby, and one member of the crew should take up position near the cross-roads to direct the remaining vehicles as they arrive. Subsequent vehicles will halt under cover and send dismounted patrols forward to reconnoiter and meet the outpost from the first vehicle. Constant radio communication will aid greatly in the assembly of the unit. If the cross-roads is held by the enemy an effort should be made to determine how strongly it is held, and then all vehicles should proceed to the next cross-roads on the axis of movement of the unit.

RULE No. 20. THE RECONNAISSANCE UNIT ASSIGNED TO AN ENVELOPING FORCE MUST BE STRONG, POWERFUL IN FIRE SUPPORT, AND FAST. IT MUST MOVE WITH SUCH SPEED AND FORCE THAT IT WILL SECURE THE UNINTERRUPTED ADVANCE OF THE ENVELOPING FORCE BEFORE THE MAIN ENEMY RESERVE CAN BE SHIFTED TO MEET IT.

A reconnaissance unit, assigned the task of covering an enveloping force, immediately assumes three missions:

1. Advance guard.
2. Forward and flank reconnaissance.
3. Mobile counterreconnaissance screen.

An enveloping attack is launched with the hope of catching enemy reserves out of position and pushing through to the objective before the reserves can be shifted to meet the attack. It follows then, that an enveloping attack, once launched, must be driven through with all possible speed in order to gain the element of surprise.

The reconnaissance force assigned to such an attack must be strong enough to fight delaying actions on either or both flanks and still be able to launch an effective attack against small enemy patrols that might be encountered in the path of the enveloping force. These patrols cannot be by-passed nor allowed to escape. They must be attacked, their retreat cut off, and the entire personnel either captured or annihilated. This entire action must take place in less time than it takes to complete a telephone warning or send a radio message. The force sent around to cut off retreat must be especially careful to spot and cut telephone wires and watch for motorcycle messengers. Under no circumstances will messengers be allowed to escape. If the approach is found to the enemy position, two cables stretched across the road just around a curve will usually take care of motorcycles and small messenger cars. These cables must be covered by fire.

Antitank mines quickly laid in the road will destroy larger vehicles. They may be tied to a small rope and pulled across the path of an oncoming vehicle. Heavy

concentrated fire must be avoided but accurate fire is imperative. Smoke screens will be used only on the orders of the enveloping force commander.

The flank reconnaissance units must push out far enough so that enemy patrols may be effectively delayed until the enveloping force has passed the point at which they might be delayed or harassed.

This is one mission on which a reconnaissance unit is forced to fight and in most cases where this mission is assigned the reconnaissance unit commander will have sufficient combat personnel attached to his unit to successfully perform his mission. In the event that additional troops are attached, the reconnaissance commander should insist that they be furnished transportation that will negotiate the same terrain with the same speed as the reconnaissance vehicles.

RULE NO. 21. MOVEMENT IN ANY DELAYING ACTION IS ACCOMPLISHED BY APPLYING THE PRINCIPLES OF AN ADVANCE IN REVERSE.

Platoons, sections, and vehicles, use the method of covering the withdrawal of the foremost vehicle as it withdraws. In this instance covering vehicles move to the flank and leave the best avenue of withdrawal open to the withdrawing vehicle.

The requisites of any good delaying position are:

1. Field of fire.
2. Cover.
3. Covered route of withdrawal.

While not every delaying position encountered has all three in a perfect arrangement, each position must contain something of each. Field of fire is most important as delay must be effected at long range. Cover is important in order to conceal your delaying position from aerial observation. A delaying position disclosed from the air is a delaying position lost. The enemy will flank it before a shot is fired. A covered route of withdrawal is necessary for the safety of the withdrawing force.

The secret of delaying action is to be able to so dispose your forces that their strength, disposition, and composition is never known to the opposing forces. Fire must be begun at long ranges and maintained until the enemy has been forced to deploy for attack. The withdrawal must be so timed and so perfectly executed that the enemy flanking attack has not penetrated to the point of bringing flanking fire on the withdrawing forces, nor is the enemy aware of the exact time of withdrawal.

Vehicles, individuals, and sections are withdrawn successively. The least engaged have priority on withdrawal, while the remaining vehicles increase their fire to prevent the enemy from knowing of the withdrawal.

RULE NO. 22. "THE GENERAL RULE IN MEETING RESISTANCE IS: (1) TAKE COVER, (2) RECONNOITER, (3) ACT."

The first thought of any individual upon being fired on is to get under cover. The natural law of self preservation still exists and is strong in human nature. There is, however, a marked difference between an individual, armed with only his rifle and bayonet, diving for the nearest swale, and the driver of a scout car or a quarter-ton jeep trying to conceal that entire vehicle and crew from observation and fire. The driver must be on the alert for every possible cover that might afford him protection. He must be ready to move towards the most likely cover without command and do it quickly and efficiently. Scout car drivers must be able to sense the ground and know from a casual observation whether or not the surface will support the weight of the vehicle.

As soon as vehicle and crew have gained the comparative safety of cover they should immediately start reconnaissance to determine the size, strength, and disposition of the enemy who delivered the fire. Every effort will be made to determine the flanks of the opposing force and fix his location. What type of fire is he using? Automatic? Rifle? Machine Gun? 37mm? Mortar? If machine gun, what caliber? Does he seem to have artillery support? Is he intrenched? If so, to what extent? What organization does he belong to? Is he cavalry, infantry, or artillery? What regiment, division, or company?

The entire reconnaissance unit should immediately start reconnaissance in an attempt to gather this information. Remember that the position of an enemy's flanks and his line determine his exact position and will in most cases give some indication of his strength. These facts, coupled with the amount and type of fire he delivers, will often determine exactly the size of his force. One prisoner captured or a good description of a casualty will often indicate to what organization the group belongs. The quality and state of clothing, food, equipment, and the physical condition of the men in the patrol are all useful information. As much of this information as possible should be sent back.

The action of the enemy patrol after he meets opposition is of extreme importance. Do they show fight or fall back? Are they pushing forward or holding on? Movements of small detachments indicate the expected action from the main body and should be reported as soon as they are learned. Prisoners should be taken if it can be done without undue involvement of the reconnaissance party. The first prisoners taken in any engagement are always important. The most likely should be selected and sent to the rear. The remainder should be disarmed and if possible turned over to the nearest large unit. If this is impracticable, disarm them, destroy their weapons and indicate that they are to march to the rear in column of two's and not look back. Have one sentry follow for a short distance but rejoin his unit after the prisoners have started well to the rear. It is better to disarm them and release them than to let them slow you down by taking care of them. In an advance they may be securely tied to trees and their presence reported.

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Are you helping to ke
his source of materi

ON the day that we donned the uniform of the United States Army we began to learn things about the Army, things that Hitler and Hirohito would like to know to aid them in attacking our country, our families, our cities, our homes, our farms, and ourselves. Every day since then we have been entrusted with information, and we will continue to be entrusted with more and more information so long as we are privileged to wear the uniform. And the more we learn, the more the agents of Hitler and Hirohito can get out of us; that is, only if they are smarter than we are. Every bit of military information is of value to the enemy, no matter how small.

These truths appear to be self-evident. Even so, every day on buses, on trains, in bars, and in the living rooms of our finest homes, seemingly unimportant bits of information reach enemy agents by some of us who don't mean to tell.

What then are the causes of indiscretion? Why is it that so much information is being given away all over the country at this very minute? There are four causes. They are:

Conceit.
Faith.
Enthusiasm.
Ignorance.

You will notice that treachery has been left out. That is because the number of traitors is fortunately very small. This is not intended for those who are betraying their country willfully; it is for those who are betraying it unwittingly, but are betraying it just the same. If enemy agents had to depend solely on traitors for their information, they would probably have a lean time, for it is a tragic fact that the majority of what they learn is given to them by those people whose patriotism is beyond question.

★War Department, Bureau of Public Relations.

Conceit

Conceit is the most common cause of leakage. Ninety per cent of indiscretions are the result of it, and 99 per cent of us are vulnerable to it.

Why do we boast? Most of us to impress a woman. That is understandable enough. Everyone tends to "hand out a line" when out with a girl. There is little harm in it, and providing you leave the service out of it, you can go ahead. The Army really isn't too much concerned about the fact that a corporal is able to persuade his girl that he gave up $50,000 a year when he joined the Army or that he would have been a senator if it hadn't been for the war, as long as his "line" doesn't include service matters.

We may be on secret duties. If that is so, we must remember that these are the Army's secrets, and that we have no right to share them with anyone.

There will always be a temptation to boast when you know a lot more than the other people you are with. It is admittedly very hard to pretend you know nothing when in point of fact you know everything; and in order to try to satisfy your conceit without giving much away, you may find yourself just hinting at all you know. That is fatal. If a thing is secret, you must not even hint at its existence.

The trouble about this boasting is that it is so contagious. A man boasts to his girl friend of what he is doing just to impress her, and she in her turn boasts to all of her friends about the importance of her boy friend just to impress them. It becomes a vicious circle with everybody trying to outdo everybody else in the magnitude of the secret information which they can impart.

Faith

As a nation we are too ready to trust our fellowmen, and to believe too implicitly in the safety of such na-

SECRET WEAPON*

ke it? Are you certain? Do you know
Check your answers by this article.

tional institutions as the United States mail and the telephone and telegraph services, all of which can be utilized to advantage by enemy agents.

Most of us consider that we are pretty good judges of character and not easily fooled. We forget that an enemy agent, if he is to be successful and avoid a firing squad, must be such a plausible and convincing person that no one suspects him, least of all those who pride themselves in being good judges of character. In other words, he will look exactly like what he isn't: a typical American with an honest face, who knows as much about the Yankees and the Brooklyn Dodgers as we do.

We should always put ourselves in the place of an enemy agent. Consider how one of the Axis agents would do his job. First, we should ask ourselves what we could learn from the conversation that is going on in the bar, club, or railroad station, or the information that is given in a letter. When we learn to adopt this outlook, we will not only be careful to keep our mouths shut, we will also want to make other people shut theirs.

But what about the faith you have in your friends and relatives; in your mother and father, and the girl you are going to marry?

Of all security lessons, this is the hardest to learn: That military information must be shared with no one, not even with those you love.

That is not to say that you must no longer put your trust in these people in whom you have confided all your life. But you must not share with them secrets that are not yours to share, secrets that belong to the Army.

Remember that the first person an enemy agent contacts when he wants to know anything secret is the wife or girl friend of the man who knows that secret.

You may feel that your wife or mother has a right to know when you are in danger, a right to be told if you know that on a certain date you are sailing in convoy, or are going on a raid from which you may never return. You may also feel that they have a right to know if this raid is canceled, so that their minds may be at rest, But this must not happen. The more people who know a secret, the less chance there is of its being kept.

Mothers and sisters and wives, with the best intentions in the world, can give away information without even knowing that they have done so. If they are worried about your safety, they will tend to confide in those who are sympathetic. In wartime we do not always choose our friends wisely, but turn instinctively to anyone who shows kindness and understanding, especially if they seem to be suffering like ourselves. An enemy agent will not only be a good listener, he will also be a sympathetic one.

If the people who love you are wise, they will not try to learn your secrets. It is your duty to keep them to yourself.

Enthusiasm

Enthusiasm is a common cause of indiscretion. Anyone who is really interested in his job finds it hard not to talk and write about it. Your first impulse when your outfit has done particularly well will be to talk about its achievements. As the time approaches nearer and nearer to when your buddies and you will be going overseas, excitement increases and it gets increasingly harder to keep the news of events important to you under your hat.

But note how easy it would be for a clever person to get this information out of you. Maybe he would flatly refuse to believe you, until you got so angry with him that you blurted out facts and figures which would prove your story conclusively. Or he would be so impressed by everything you told him that you would tell more and more; or perhaps he would adopt the line of being a technical expert himself, pretending to know all about it already, and enticing you into a highly technical discussion in which you would be anxious to show off your knowledge.

Remember, never add to a newspaper account, no matter how proud you may be of the fact that you know the whole story.

Ignorance

A vast number of people are going about the country today giving away vital information simply because they have no knowledge whatsoever of the way enemy intelligence service works. They just cannot understand that it is all a matter of putting two and two together, of going around and collecting bits and pieces of information from a thousand different sources, and then cleverly evaluating them into a dangerous report.

Get it firmly fixed in your head that the enemy agents

are not all parading about in Washington and our military establishments, preparing to waylay a general and steal the plans of a forthcoming attack. They are quiet, hardworking investigators who go about using their eyes and ears, and picking up a little item here and another one there by encouraging people to say more than they should oddments of news which tell of troop movements and concentrations of supplies, of strengths and weaknesses at certain points; of the destination of convoys and the position of battleships, aircrafts, tanks, and guns. A scrap of conversation picked up by an agent may at first seem to be of little value until another report from some other source continues the story and links it up with something else. The intelligence officer's job is to look for clues no matter how small, and to see what he can deduce from them.

Goal of Security

The goal of security education is the instinctive security-mindedness of all in the military service. When discretion on all military matters becomes second nature to everyone so that we automatically shut up like an oyster whenever strangers try to get us to discuss our work, then the battle of security will have been won. It should not require an effort to be discreet. On the contrary, you should feel an acute sense of guilt whenever you find yourself referring to anything that is secret.

Remember that it is not only a crime to commit a breach of security, but also to conceal one. Surprise is a vital factor in war. If the enemy finds out our plans, it is essential that we should know that he has done so. Therefore if a leakage exists those in authority must be notified at once.

You must see security as an additional weapon in your hands, a weapon which, if developed and perfected, can become as valuable to the United States Army as the tank, the airplane, or the antiaircraft gun. That may sound like an exaggeration, but it is not. Our technical experts are working night and day to reduce our losses by faster aircraft, by greater hitting power, and through the development of better equipment, but those losses would be reduced in a far more sensational way if all leakage of information to the enemy could suddenly be stopped.

It is your duty not only to keep your mouth shut, but also to see that others do the same. If you know any secret information, keep it to yourself; and if a friend of yours knows something secret, do not try to find out what it is.

In wartime no one is ever fully off duty, and no one must ever be momentarily off guard.

Don't Talk

1. ABOUT TROOPS:

   Location, except for troops in training and on police duty.

   Where, when, or how troop movements will be made.

   Characteristics and limitations of equipment or weapons.

   Concentration or special training of units.

2. ABOUT HARBORS, SHIPS, AND CARGOES:

   Location, destination or cargo of United States, Allied, or neutral vessels.

   Any information about a transport, convoy, harbor defense, or minefield.

   Construction or proposed launchings.

   Condition and setup shipyards.

   Sinking or damage until officially announced.

3. ABOUT DAMAGE:

   Generally speaking, do not disclose any information in your possession as to damage done to our side by any action of the enemy.

4. ABOUT AIRPLANES:

   Production of any plant or number in any military unit.

   Location, destination, or time of departure of air units.

   Troop movements or war material shipment by air.

   Characteristics and limitations.

   Development or experiment.

   Name, plans, or orders of members of Air Transport Command.

5. ABOUT FORTIFICATIONS AND ANTIAIRCRAFT INSTALLATIONS:

   Location and description.

   Location of bomb shelters or camouflaged objects or other defense precautions.

   Any information of United States installations outside the United States.

6. ABOUT PRODUCTION:

   Don't give out any information on production known to you. Let the other fellow get what he's supposed to know out of the newspapers.

7. ABOUT WEATHER:

   Don't pass on information of weather conditions other than that which appears in your local newspapers.

8. ABOUT RUMORS AND HARMFUL STORIES:

   Don't repeat stories—

   Which stir up racial discussion.

   Inimical to our friendship with or in criticism of our allies.

   Of the enemy's prowess.

   Of our inefficiencies or shortcomings.

   About a shortage of or poor quality of our equipment.

   Challenge all rumors.

The Soldier and the M1 Rifle*

Care and Maintenance of the Garand Semiautomatic in the Field

Lieutenant Howard L. Bagley, Ordnance

THE U. S. rifle, caliber .30, M1 is the present standard service rifle of our Army. The rifle is referred to by most men in the service as the "M1" or the "Garand," after John C. Garand, inventor, to whom credit for the development of the rifle is given. The need for a semiautomatic or automatic shoulder arm was foreseen as far back as the year 1902. Various types of actions were tried, but none were equal to the standards set up for that type of weapon. Commercial manufacturers and gunsmiths were induced to develop and submit weapons for test, and a large number were submitted, but none were satisfactory.

Springfield Armory introduced a number of weapons with varied types of actions, of which the gas-operated type showed the greatest possibility. A trend to change the type of ammunition was introduced, and the experiments continued. At this stage, Mr. Garand presented a gas-operated weapon with a bore diameter of .276-inch which stood the tests very well. It was suggested that he try the same design in a caliber .30 rifle. This was done, and the new rifle easily passed the preliminary tests. As a result, in the latter part of 1932 eighty of these rifles were ordered made for further test. These eighty rifles, handmade for the most part, were completed by the middle of 1933 and were turned over to the various service schools for prolonged tests and trials. The Garand stood up under these grueling tests in fine shape and was accepted by the various combat branches as suitable for the service weapon. It was adopted on January 23, 1936, as the new standard United States service rifle for manufacture and issue. Some of the first eighty rifles manufactured are still in service at the Ordnance School.

The rifle has advanced through various stages since the original model was adopted; changes were made in the barrel, gas cylinder, and a number of smaller parts as the years passed. The causes for these changes were generally due to the need for a more efficient means of manufacture. The change in the barrel eliminated a part that was causing some trouble both in cleaning and in accuracy. Such changes are commonplace in the development of any item of ordnance matériel. The first model is very seldom entirely satisfactory and has to be altered or parts must be redesigned to aid in the process of manufacture or to improve the operation of the weapon. A very good example of this is the U. S. Springfield rifle, caliber .30, M1903, which was considered the best of the military rifles of the world, but after twenty years of use it was decided to make a change in the design of the stock. Like circumstances will no doubt prevail with the M1 rifle as time passes. The soldier should expect these changes as the means by which the Ordnance Department improves his fighting equipment both in workmanship and performance.

Let us now consider the rifle as it is issued to the soldier and weigh the problems of care, cleaning, and adjustment with which he is faced in the field. The rifle is the soldier's best friend in battle, and he therefore should be given all available information that will help him to understand and care for this important mechanism.

The M1 rifle is issued to the soldier usually in the condition that it is received from the point of supply. He then is expected to clean and prepare his weapon for service—a very disheartening task for an inexperienced man. He has a rifle completely filled and covered with a rust-preventive compound, and he probably is very uncertain as to where or how he should start to clean it. His first step should be to remove the excess grease from the outside of the rifle by using a coarse cloth. The trigger group is then removed and washed in cleaning solvent to remove the excess grease from the parts. The group may then be completely disassembled and further cleaned with solvent, but care should be taken not to lose small pins or parts. These parts may be further washed in boiling water if it is deemed necessary and then dried. They should be given a light coat of oil by using an oily cloth free from lint and dirt. The group may then be reassembled and wiped off with an oily cloth to remove all traces of moisture.

The stock group is then removed and cleaned by wiping down with a cloth saturated with solvent. The stock should not be placed in a container of solvent as it is detrimental to the wood. The stock should then be wiped dry and a very light coat of linseed oil applied to the wood. The barrel and receiver group may be taken down next and the parts cleaned in the solvent. The wood hand guards should not be washed in the solvent but wiped clean with a cloth saturated with it and then dried and oiled the same as the stock. The remainder of the parts may be submerged in the solvent and cleaned, dried, and oiled. Hot water may be used as for the trigger group if the parts are completely dried and oiled afterward. The barrel, chamber, and gas port at the muzzle should be cleaned and checked for the presence of heavy grease. The bolt group should be checked for the presence of heavy grease around the firing pin and ejector. This grease should all be removed and a light coat of oil applied.

*Courtesy, *Army Ordnance*.

Came the dawn—and a rifle still uncleaned

After the rifle has been cleaned, oiled, and assembled, it should be checked by an experienced man for completeness and proper assembly.

The soldier should familiarize himself with the rifle so that he knows the entire mechanism and the function of all parts. He should be able to name a majority of the parts by feel and to disassemble and assemble the weapon in the dark. His rifle is just as important to him as his mess kit, and he should know the rifle equally well. Since the soldier has to perform first-echelon maintenance on the rifle, he should know all the ways and means of doing this work. He will not be able to depend on some one else for repairs in battle.

Proper lubrication is the first step in preventing malfunction and breakage. All parts should be lubricated with light oil; overlubrication does not help the function of the weapon and causes dust and foreign matter to adhere to the parts.

Proper cleaning after firing is not always within the power of the soldier. He may not have the time or facilities to do a good job, but he should do the best he can with the time and equipment on hand, as any cleaning possible is better than none. Water alone poured through the rifle barrel and dried out by any means is better than no cleaning at all. For example, wiping out a dirty mess kit with dry grass or leaves is better than leaving it dirty and finding it totally unusable at the next meal. It is the same with the rifle.

That day on maneuvers—Jammed!

Replacement and minor adjustment of certain parts is within the province of the soldier. This includes replacement of the extractor, firing pin, and such parts as he might replace without special tools or gages. Adjustment of the rear sight and tension of the spring in the sight come under this classification. The soldier should be cautioned about interchanging parts that would impair the safety of his weapon. He may find it necessary to use parts from the rifles found on the field in order to keep his own weapon in action, but he should be cautioned not to change the bolt as he thus may set up a condition very dangerous to himself.

The soldier also should know how to render his rifle unserviceable should it be in danger of falling into the hands of the enemy. The soldier can make his weapon unusable in many ways. The barrel may be bent or the gas cylinder may be damaged, but this may not prevent firing the weapon. Removal of the extractor will prevent the use of the weapon without considerable difficulty. About the easiest way to damage the rifle to prevent its further use is to separate the three groups and break the stock, raise the extractor, and drop the firing pin. This will cause the enemy considerable delay in placing the rifle back in service.

That evening—Seeking professional advice

Since the rifle is the soldier's best friend in combat, he should treat it with the care due it. In return, the rifle will not fail in its performance. A great majority of the failures of the M1 rifle are due to neglect or improper care, just as any other mechanism will break down if not properly cleaned and lubricated at regular intervals. Where the climate is wet and the humidity is high it will be found that the rifle will require more lubrication and the bore will require considerably more care to keep it in condition. The chamber will have to be watched for rust and roughness that would cause difficult extraction. Rust will appear on exposed parts

that have been oiled, due to sweat from the hands. To prevent this, the rifle should be wiped clean with an oily cloth after use. In a dry, hot climate it will be found that less oil is much better for operation due to the tendency of dust and grit to adhere to the oil thus causing excessive wear and hard operation. Under these conditions, lubrication should be applied only to those parts that act as cams and bearings. Although very little oil should be used it should be applied more frequently.

The soldier may find that his new rifle is very stiff and rough in its operation. This is true of all new weapons, as the camming surfaces are not perfectly smooth and the piece needs breaking in or wearing down until the parts become worn smooth and free. This may be done by hand operation of the piece as well as firing during what might be called the break-in period. The care and patience through this period will greatly determine the life of the rifle and its efficiency.

Cleaning the bore is an important factor and an art in itself if properly done. The new bore as it is received

Next day—A drop in time!

from the manufacturer is bright and shining and looks very clean. The tops of the lands have a finer finish than the grooves due to the process of manufacture: the lands are a hone finish, the grooves a scrape finish and are much rougher. If the surfaces of the grooves were magnified it would be found that they were covered with minute scratches. This condition causes the rifle to be much harder to clean in the first stages of its life. The cleaning of the bore during this time should be watched very closely, care being taken that all powder residue is removed. The minute scratches spoken of will in time wear down to a smooth finish, but in so doing they change from scratches to very small cracks. These fine cracks will open up from the heat of firing, and powder fouling will be forced into these minute apertures from the high gas pressure in the bore and from the friction of succeeding rounds. As the rifle cools, the cracks will close down on the powder residue.

This residue is the substance that causes the trouble in the bore, for the bore can be cleaned until the surface

Later—Learning how to clean the M1

is bright and the cleaning patches come out unsoiled, but this residue in the cracks still remains to do damage and must be either removed or neutralized. This can be accomplished very easily in the field if hot water is available which will heat the barrel and open the minute cracks so the residue may be washed out. Cold water is far better than oil, as water of any temperature will dissolve and wash out the salt found in powder residue while oil will not dissolve salt but will only retard its action for a short time. Later, the bore will start to turn dark but will not show signs of powder fouling, and if a patch is passed through the bore, it will come out clean. These conditions indicate the presence of active salts in the bore that have not been removed in cleaning or have lain dormant in the bore due to the coating of oil. The presence of oil in the bore does not mean that rust will not appear unless the bore has been properly cleaned before oiling. The soldier should remember that a neglected rifle will be a poor friend in combat.

Editor's Note.—The M1 rifle is a gas-operated, clip-fed, self-loading, shoulder weapon, slightly over nine pounds in weight. It fires the same ammunition as the U. S. rifle, caliber .30, M1903 (Springfield), and all

Much later—Oiling the rifle prior to assembly

standard U. S. caliber .30 machine guns. The ammunition is supplied in 8-round, reversible, *en bloc* clips which are fed by hand into the magazine of the rifle. Upon being inserted, the clip depresses the follower, which, in turn, releases a catch, allowing the bolt to go forward under the action of a compressed spring, stripping the top cartridge from the clip and chambering it. When the last round in the clip is fired, the empty case is ejected; the clip also is thrown out, and the bolt is retained in the open position.

The semiautomatic or auto-loading action of the rifle is accomplished by a mechanical arm or "robot" called the operating rod. This component takes the place of the human arm in operating the bolt, the power being obtained from the propellent powder gases. In the conventional bolt-action rifle, such as the Springfield, the bolt remains closed and locked to the receiver after the round is fired. To reload, it is necessary to grasp the bolt handle manually, raise it until the locking lugs of the bolt are disengaged from their locking recesses in the receiver, and then draw the bolt to the rear. The bolt next is returned to its locked position by hand.

In the M1 rifle, this manual operation is performed automatically by the operating rod. Briefly, the cycle of operation is as follows: When the cartridge is fired, the bullet is propelled down the bore. As the rear end of the bullet reaches a position near the muzzle, the powder gases enter a chamber and impinge against a piston, driving it to the rear. This piston is at one end of and also an integral part of the operating rod. The other end of the rod contains a slotted cam, into which projects a cam-shaped extension of one of the bolt-locking lugs. In traveling to the rear, this slot cams the bolt-locking lug extension upward, rotating the bolt until the bolt-locking lugs are disengaged from their locking recesses in the receiver. The operating rod continues to the rear with the bolt which in turn extracts and ejects the empty case, cocks the hammer, and is then returned.

German Small Arms

The equipment shown in this picture was captured by Red Army men and probably all came from one infantry company. In the background are a pair of binoculars, a radio set of the type used by an infantry company, a field telephone set with batteries, an emblem denoting a low echelon command post, and ammunition for the antitank rifle. Second from left in the foreground is a carbine; to the right of it lies a 7.9mm antitank rifle, three of which are assigned to each company; next is a light machine gun (MG 34) which fires at the rate of 900 rounds per minute. Rifles lie to right.

LEADERSHIP*

THERE are two general views on the subject of leadership. The first is that leaders are born and cannot be made; the quality exists or does not exist. If it does not exist, nothing can be done about. The second is that each of us possesses leadership to a greater or a lesser degree, and that leadership can be developed. I hold the first view, with the one qualification that individuals frequently possess inborn qualities of leadership which lie dormant through lack of opportunity for development. If the individual is placed in a position of leadership, those inborn qualities can be developed. Those who possess qualities of leadership which they have had no opportunity to develop may be encouraged to do so. Those who do not possess qualities of leadership may recognize that fact and exercise control over their personal characteristics, minimize the seriousness of their deficiency, and, in accomplishing their military duties, make maximum use of other admirable qualities which they may possess. Moreover, because many opportunities exist in the Army for individuals who work better alone than as leaders of men, no disgrace attaches to the officer who is not a leader.

What is leadership? No one has yet succeeded in defining it. In the Army we are prone to consider only the leadership of the man on horseback—leadership on the battlefield. This is too limited an approach. Leadership in the Army cannot be restricted to the battlefield. General Marshall himself must exercise leadership in the administrative as well as in the strictly military field. Leadership is required of an officer sitting behind a desk, just as much as of one leading a bayonet charge. Leadership must be exercised in the religious, social, and political fields, and in industry. The primary difference between leadership on the battlefield and leadership in other fields is that the military commander must be able to exact the supreme sacrifice of life itself from those who are led. Even this difference is more apparent than real. The willingness of a soldier—or of a civilian, for that matter—to die for our country results as much from the leadership of the President as from that of the platoon commander.

Ordway Tead in "The Art of Leadership" defines it as follows: "Leadership is the *activity* of *influencing* people to coöperate towards some goal which they come to *find desirable.*" Immediately the question arises as to what is meant by *activity* and whether all goals toward which men have been led were necessarily found desirable by those who were led.

In its pamphlet, "A Discussion of Leadership," Culver Military Academy defines leadership as "The *process* of securing the wholehearted coöperation of an individual or group of individuals in working towards a desired goal." Again, what is meant by process?

Colonel Frank M. Smith, in a conference on this subject, defined leadership as the "*art* of imposing one's will upon others in such a manner as to command their obedience, their confidence, their respect, and their wholehearted coöperation."

The primary flaw in these attempts to define leadership is in trying to define one unknown quality by another. We face the same predicament in defining leadership that we face in attempting to define electricity. We define electricity in terms of electric light bulbs; that is, in terms of how it manifests itself. We can define leadership only in terms of how *it* is manifested.

What are the requirements of a leader? Again, there is no agreement. We must keep four factors in mind: first, the leader; second, the cause in which he leads; third, those whom he leads; and finally, the opportunity to exercise leadership. Various writers list qualities which they consider desirable in a leader. For purposes of argument, let me offer my own views on the qualities necessary in a leader. First of all, he must have a *cause* to lead. Next, he must possess an inner urge—the spirit of a crusader—in furthering that cause. Third, he must have a determination and even a ruthlessness in carrying that cause to success in the face of every obstacle. Fourth, he must be able to engender in those whom he leads a *willing* and even *eager* coöperation in that cause. This listing of qualities also raises as many questions as it answers.

Others give entirely different definitions of the qualities of leadership. Tead lists the following qualities which are *desirable* in a leader. I suggest that each be subjected to critical analysis:

(a) Physical and nervous energy.
(b) A sense of purpose and direction.
(c) Enthusiasm.
(d) Friendliness and affection.
(e) Integrity.
(f) Technical mastery.
(g) Decisiveness.
(h) Intelligence.
(i) Teaching skill.
(j) Faith.

The Culver pamphlet furnishes a number of groupings of traits of leadership, one of which, a tabulation by Colonel Paul S. Bond, U.S.A., Retired, contains 83 attributes of leadership.

These differences of opinion merely emphasize the lack of agreement as to what constitutes leadership. A listing of the qualities of leadership becomes merely a set of ground rules, evolved in the mind of the particu-

*Adjutant General's School. Copies in booklet form can be secured for 10c each from The Book Service, Adjutant General's School, Ft. Washington, Md.

lar exponent of a particular grouping of qualities, as to which are considered socially desirable. These rules may, or may not, be valid under a particular set of circumstances.

If we accept the point of view that leaders are born and not made, we must answer the question, "What is man?" before we can answer the question, "What is a leader?" The Chief of Staff has expressed a vital interest in the problem of finding a means to determine who are our army leaders. That problem was submitted to the psychologists of the Personnel Procedures Section, The Adjutant General's Office. They admitted that no conclusive answers could be found. This is illustrated by the fact that, although they were able to prepare objective tests to determine various aptitudes, no such conclusive tests as to leadership could be prepared at the present state of scientific, psychological thought.

Perhaps it would be more accurate to say that we deal with *leaderships* and not *leadership*. The question arises, for example, as to whether the leadership of Lee was the leadership of Huey Long. So far as cause is concerned, the two were poles apart. Yet each was impelled by a force within himself. Long did not imitate Lee; for leadership is never imitative—it is a magnetic force, basic in the structure of the individual. To some extent it is a question of human chemistry. All great leaders have possessed this force: President Roosevelt, Lee, Grant, Napoleon, Hitler, Mussolini, Alexander the Great, Huey Long, and even Casanova. Although we are unable to explain this magnetic force, we can recognize its presence in the lives of all of our great leaders.

We may illustrate the magnetic influence of the leader upon those whom he must lead by comparing him to the influence of a magnetic coil upon a bar of iron. Normally, the bar of iron is inert, lifeless, its molecules lying crosswise and working at cross purposes. When placed in the magnetic coil, the iron becomes magnetized; all the molecules lie with their poles in the same direction; it becomes a force—a power—in itself, and is able to exert its own strength upon other inert metals. In the same way, the leader acts as a magnetic coil to magnetize his followers, to convert their inertia into power and thus animate them in turn to exert their power in a common direction.

Consider next the causes which have been led by our great leaders. Again we may quote Tead: "A fact not to be ignored is that people are influenced by a leader because he becomes the personal embodiment or symbol of the cause he is serving. Of outstanding value as helping to create a strong and deep attraction to many objectives is the loyalty which fastens upon the leader himself as an appealing and popular figure. People crave the flesh and blood reality of one who will say: 'Come and follow me,' or 'Go thou and do likewise.'

"The potency of this appeal of the person is obvious in the great religions of the world, not only in relation to their founders but in the influence exerted by lesser leaders—saints, popes, bishops, priests, and preachers. The person has become the symbol of the cause and has given prestige to it and human warmth. Indeed, it is in religious groups that this loyalty has on occasion risen to its sublimest heights and to the most self-effacing, sacrificial devotion on the part of the followers. And always, be it observed, this loyalty at its best has been based on the profound claim that he who would thus lose life in devotion shall find it in self-discovery. The seeming complete renunciation demanded was always in favor of a larger self-realization to be made in part through identification with the person of the leader. The idea voiced in the sentence, 'I, if I be lifted up, will draw all men to me,' is a penetrating recognition of the truth of complete self-realization through complete loyalty."

A similar truth is to be observed in military affairs. Great generals—supported by colonels, majors, captains, lieutenants, sergeants—have symbolized a purpose and often won a devotion which readily led to death itself.

The degree to which the individual, through dramatizing the cause he leads, becomes a symbol of the cause is exemplified in Alexander the Great, who became deified in the minds of his followers; or Augustus Caesar, who was similarly deified; or General Lee, who in the minds of the people of the South is idolized to the extent that his human traits fall in the background and he partakes of the supernatural. The same might well be said of Hitler as exalted in the minds of the German people, since Nazism, the cause of his leadership, has became a cult. An extreme case of course is Japan, whose Emperor *is* deity.

The comparison of Lee and Hitler illustrates an essential point concerning causes for which men struggle. In our minds the leadership of Lee was entirely noble; whereas the cause of Hitlerism is entirely ignoble. Great leaders heading great causes epitomize and dramatize causes, but they cannot disassociate themselves completely from the spirit of their followers. They are part of their times—the physical embodiment of the causes which lie inert in the hearts of their followers. In order to lead, they must be out in front; they must sense the objectives toward which people are striving; they must make that cause their own; and then, through exceptional internal force, they must drive on towards the common goal.

This brings us to our final topic—those who are led. Distinctions can readily be drawn between the people of the Confederacy—followers of Lee—and the people of Louisiana—followers of Huey Long; or the people of Germany—followers of Hitler—and the people of colonial days—followers of George Washington. This is merely to repeat once more the fact that the leader cannot disassociate himself from his source, that he seldom can force any substantial change in the character of his followers, and that the most he can do is to anticipate the inner urges of his people, clarify their objectives in their own minds, and carry them in the direction they

have wished to go. To illustrate—it is a fallacy to assume that the people of Germany are better than Hitler, that he has led them astray. Rather, he has merely crystallized their inner urgings and has held them in the direction they have wished to go.

So much for the broader phases of the problems of leadership. Let us now apply the problem to our own specific situations as part of the military service.

First of all, our *position* of leadership has been imposed upon us. Leaders, or gentlemen, cannot be made by an act of Congress. Nevertheless, just as we must recognize our responsibility to *act* as gentlemen, so must we recognize our responsibilities to *act* as though we are leaders, even though, in fact, we may not be.

The second point to consider is the cause for which we are striving. It is not given to us as Army officers to be leaders in the grand sense and for great causes. To make our problem more difficult, there has been a basic failure on the part of the American people to recognize their broad national objectives. We are in the midst of a revolution in our thinking on economic and social problems, as well as military ones, and our thinking has not yet crystallized. Our military objectives are awaiting the crystallization of public opinion along economic and social as well as military lines. Until our national objectives are determined by the people themselves or through stimulation by national leadership or by other causes, we must limit our immediate objectives to our own military situation. Although we cannot hope to regenerate the human race, we still have a broad field of activity for leadership in doing our particular jobs better than anyone else does, in order that the final objectives may not be jeopardized. The West Point motto: "Duty—Honor—Country" should summarize our cause adequately for our purposes.

The next point is the need for a crusading spirit. Although the country as a whole may not yet have found its broad objectives, we should find sufficient inspiration in attempting to do our share to perpetuate democracy. Democracy is itself a thing of the spirit, which we can feel but cannot define. We may contrast it with totalitarianism. The people of totalitarian countries pride themselves on their strength, toughness, and general superiority to peoples of democratic countries. As a matter of fact, they are weak, for they have abdicated the freedom which the individual has wrested from nature during a million years of slow development, and they have given it to the control of a handful of ruthless men. This small group of willful leaders consititute a thin outer shell surrounding an unsound core of a people who have abandoned themselves completely to being led. Once that outer shell of leadership is punctured, the country itself must fall.

In a democracy, on the other hand, power emanates from a sound inner core and spreads outward as a living force. So long as the interior is sound, it makes little difference what particular group of individuals occupy positions of authority at the outer surface. If the surface be penetrated at one place, the safety of the country need not be impaired. In the one case the people are worked upon, are being guided. In the other *they* are working, and guiding themselves. The perpetuation of democracy, to which we in the Army are committed, certainly should serve as justification for our full efforts.

The Army of the United States is a democratic army and must apply democratic principles in its leadership. Although we may be unable to define leadership, we may still list a number of qualities which the Army has come to regard as essential to leadership.

Some of the basic characteristics of leadership are summarized by Mr. H. Gordon Selfridge of London, who differentiates between the boss—one who commands—and the leader, as follows:

"The boss drives his men; the leader coaches them.

"The boss depends on authority; the leader on good will.

"The boss says 'I'; the leader says 'We.'

"The boss says, 'Get there on time'; the leader gets there ahead of time.

"The boss fixes the blame for the breakdown; the leader fixes the breakdown.

"The boss knows how it is done; the leader shows how.

"The boss makes work a drudgery; the leader makes work a game.

"The boss says, 'Go'; the leader says, 'Let's Go!' "

Let me suggest the following qualities of the military leader to supplement the summary of Mr. Selfridge:

Vision: The leader must have vision, insight, intuition—call it what you will—to enable him to grasp the significance of the cause for which he is striving, and to appreciate and anticipate the many factors which bear on the success of the cause. The leader must always have the answer to the fundamental question in an estimate of the situation, "What is my mission?" and must have his plans completed in advance, to the last detail, to accomplish that mission.

Knowledge: The leader must have a thorough understanding of his job. He cannot afford to be in error. Unless he knows what he is talking about, his prestige is soon destroyed in the eyes of his followers.

Force: He must have tenacity of purpose, an inner drive, a personal magnetism. He must be a self-starter who can set his followers in motion. He must be the magnetic coil to magnetize his followers. He must stand alone and not, himself, expect to be magnetized from without.

Courage: He must have physical and moral courage. Many a leader outside the Army has been a physical or moral coward. The Army leader cannot afford to be either. Above all, he must have moral courage. Many a man who would scorn to desert in the face of the enemy, deserts in the face of moral opposition. Physical desertion can be observed and thus brought under control by public opinion. Moral desertion is hidden. Moral cowards are like termites hidden in the woodwork, who

undermine the entire structure. *Failure of moral courage shows lack of faith in the importance of the cause.*

Decision: The leader dares not vacillate. Courage, knowledge, and self-confidence are necessary in saying "yes" or "no."

Tact: This quality is offered with hesitation. In the Army, *tact* too frequently has come to mean subservience; tact is expected only from the junior to the senior. A man of force is seldom considered a man of tact. Ordinarily, tactlessness is nothing but rudeness. In a broader sense tact towards *both* seniors and juniors is important in a leader. Tact cushions the impact of the force of his leadership upon reluctant minds. The leader must determine whether in the long run success can best be obtained by cushioning the force of his leadership, or whether it can best be obtained by striking with all his power.

Judgment: The leader must have judgment to determine the best means of accomplishing his mission. Since most of us cannot be leaders in the grand sense and can lead only within circumscribed limits, and then chiefly with subordinates, we must be able to recognize the fact that a point may be reached beyond which, with all of our force, we cannot go without sacrificing the mission itself.

Knowledge of psychology: The leader must have an insight into human nature. He must be a practical psychologist and must know men. He cannot influence people if he does not have a deep understanding of what they are and how they are motivated.

Delegation of authority: In delegating authority the leader demonstrates his knowledge of psychology. He cannot do every man's job. He cannot expect to be the horseshoer in every troop or the clerk in every office. In delegating authority he stimulates the self-confidence of his subordinates. Delegation of authority implies the ability to organize the efforts of subordinates. From the standpoint of accomplishment of the cause, the value of delegation of authority cannot be overestimated. The unaided efforts of the leader can accomplish little. He must look to others for power. Delegation of authority increases the total power behind the cause in geometric ratio.

Loyalty: The leader's first loyalty is to the *cause.* Loyalty to a superior in his official status is implicit in loyalty to the cause itself. One cannot advance the cause unless he extends loyalty to those above him, or to his subordinates as well, upon whom he must rely to further the cause. He should not assign to his subordinates tasks beyond their abilities, which end in discouragement. Once having assigned a task, he must give his subordinates moral support and back up the decisions which they may make in his name. He should never require his men to do any task which he is unwilling to do himself.

Interest in Subordinates: The leader must have a generous and sympathetic interest in his subordinates. He must look after their welfare, stand between them and the outside world, and defend them against raids upon their welfare from outside sources. The leader is the chief of the tribe. To him the subordinates look for guidance and protection. Instead of criticising them eternally, he must show appreciation of their efforts. He does not whittle them down to a smaller size nor make them appear less in their own eyes. Only a small man indulges in whittling. If you whittle a man down, you are whittling him down to *your own* size. Build him up! Tap the unreleased resources of the individual, and he will grow to a stature which will add to your strength.

Justice: The leader must be just. He must give equal treatment to all. He cannot show favoritism to his golf or poker partner. He must act only on the basis of facts, and with logic. No problem can be solved with the emotions. Anger in the leader is a sign of weakness. Injustice rankles forever.

Personal Dignity: The leader must possess innate dignity. He should not be unduly familiar with his subordinates, since familiarity breeds contempt. He need be neither sticky nor snobbish. He can be a friend to all, but to a degree he must keep himself to himself.

Selflessness: Leadership cannot be exploited for personal aggrandizement. One may symbolize a cause, but the cause must be greater than himself. Only by advancing the cause can stature be acquired by an individual. One of the most detestable individuals in the Army is the petty politician who considers that the entire system functions for his personal benefit. Placing self before the cause destroys the cause.

Personal Integrity: The Army leader must have personal integrity. Al Capone was a leader without accepted standards of personal integrity. Such leadership the Army cannot tolerate. We still expect truthfulness, honesty, character.

Discipline: Men like the commander who is severe but just. But discipline is obtained by leading, not by driving. Too many courts martial, too many "explain-by-indorsements" are signs of the inefficient officer. In fine, the leader must lead, must command, must exact the last effort from his subordinates, but must be just.

These are but a few of the many qualities which might be desirable in a leader. The line of differentiation between those qualities which go to make up the leader and those qualities which go to make up character is thin. Any one possessing all of the eighty-three qualities listed by Colonel Bond would indeed be a superman. The only leader who might be considered as possessing them all is General Lee.

In conclusion, let me emphasize the point that since it devolves upon you to be a leader, *be one.* If you are indeed a leader, within you lies the force which must animate others. *But you must turn on that force.* Of what use is electricity if you do not turn on the switch? Never hesitate to assume leadership. If you are a real leader, men will instinctively follow, given the opportunity.

Communications Notes

By Captain John W. Hopkins*

COMMUNICATIONS may be defined as the impartation of intelligence from one person or agency to another. Military communication systems strive to accomplish this action speedily and without divulging information of value to the enemy.

The accomplishment of speedy communications may be said to depend on four factors:

1. Trained technical personnel.
2. Properly maintained equipment.
3. Careful selection of the agency which is to be used in the transmission of messages.
4. Care on the part of commanders in preparing the message which is to be sent.

Operating personnel can be considered trained only when their every action during the operation of their equipment is designed to speed traffic through their hands. Unnecessary radio traffic, the exchanging of conversation or superfluous procedure signals indicate untrained, and even worse, unthinking, operators. Radio personnel are too often observed cluttering the air with the bromidal ZSG—"What's my readability"—call simply because no one has communicated with their stations for 30 minutes. This obviously is intolerable.

The radio operator who knows his equipment and his job can often do the impossible. A piece of wire, weighted and thrown over a tree makes a far more efficient antenna than the standard "fishpole" type used on vehicles. Range of communication is thereby increased. One hundred fifty feet of wire stretched in the form of a V and suspended from the ground by a tent pole at each end and the mast base of the vehicle at the apex will form an antenna which will concentrate a signal in the direction in which the V points. Good operators know and achieve much from small things such as these.

Messengers, too, should be soundly trained, intelligent individuals. The dependence which is to be placed on them will be great. Only the more intelligent men are suited to finding their way by map and to thinking as quickly as will often be required of the messenger.

Proper maintenance of signal equipment is contingent upon frequent inspection and the proper performance of "first echelon" maintenance. Minor abuse of radio equipment, such as improper handling of key, microphone and headset cords, and failure of operators to understand such minor operations as changing tubes, account for a high percentage of equipment failure. Lack of realization of the fact that the light SCR 510 and SCR 536 sets are fragile equipment accounts for much of their breakage and failure.

Selection of the agency which is to transport a message serves the purpose of conserving the more rapid agencies for messages demanding quickest dispatch. Administrative messages should as a rule go by means other than radio. Where distances are short, a dismounted man or a mounted messenger can accomplish delivery as rapidly as can any other means. Advantage should be taken of scheduled messengers, covering stated routes at stated time intervals and handling messages of secondary importance.

Commanders should exercise care in the classifying of messages and an urgent (O type) message must be urgent *with relation to other traffic sent.* Unnecessary words should be deleted from messages. A good tactical radio net can handle only twelve short messages per hour under most favorable conditions. The operators are often slowed by poorly printed or unprinted messages.

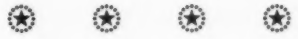
Irrespective of how sent, all messages are subject to hostile interception. From realization of this fact the originator of a message should, as the person responsible, see to its safeguarding by codification if it contains any element of information of value to the enemy. Conversely, however, a message of no value to the enemy should be sent in clear to spare the time involved in its transmission. Generally speaking, messages of the following types may be considered of no value to opposing forces:

1. Messages that report enemy information.
2. Routine messages that give no information of location, disposition or size of own force. Example: "At scheduled location, negative report, continuing mission."

Under no circumstance should clear text and code be used in the same message. This practice clearly gives a clue to the code or cipher used.

Wire communications are of course subject to tapping, but their use, *per se,* does not give away the presence and locations of troops as does the use of radio. Only a small amount of equipment and skill is required to place the rough location of a set of any appreciable power. The Germans, in realization of this fact, maintain complete radio silence within their armored units until contact is made. At this time radios go into action on voice and without attempt at cryptographic precautions. The theory of this operation is that information gained from interception at this time is inopportune.

*7th Cavalry.



WHAT'S WR

This scene shows an all too familiar figure (in recent maneuvers)—the bridge guard who had been hastily posted and given certain orders that no one was to pass without proper recognition. Is he faithful? Foolish? How long would he survive with Japs or Germans in the vicinity?

☆ ☆ ☆

Maybe the enemy would think erosion caused these tracks leading into a unit's bivouac—maybe he wouldn't. This is what happens when trucks are allowed to move into a bivouac area at random. An enemy reconnaissance plane could spot these and his follow-up pals certainly would destroy whatever unit and vehicles are hidden in the wooded area.

THE pictures accompanying this article were actually shot during the 1942 Louisiana and Tennessee maneuvers—not during the 1941, nor 1940, nor 1939 maneuvers, but during the 1942 maneuvers—more than six months after Pearl Harbor. They show failures in fundamental training that must be corrected. The pictures should strike home and make us wonder why the mistakes occur and reoccur. What is wrong? The failures are many, as you can readily see; but where does the responsibility lie? What are the "why's" behind these pictures.

The officers and men who commit these flagrant mistakes are not conscious of real bullets overhead, or of real bombs from planes, or of real shells from enemy artillery.

The reports of our own units in action in the Southwest Pacific, of our Allies on the Russian Front, of our own units and Allies on the North African Front, continuously emphasize the necessity for rigid, realistic training. Maneuvers are to war as football scrimmages are to the "big game." If fundamentals are not constantly insisted upon, checked, and rechecked, the plays will fail at the critical moment and the game—battle—will be lost.

Realism was lacking in former maneuvers because we lacked fighting incentives. That lack no longer exists. We are at war, confronted by ruthless, capable enemy fighting machines. Our troops are now equipped

★The Cavalry School.

WRONG HERE?*

with modern, efficient equipment, an adequate air force, and armored vehicles, the equal or better means than those possessed by our enemies. There is no longer reason for the lack of realism in the 1942 maneuvers that caused men to be haphazard about simple fundamentals of soldiering.

Are these mistakes made because of a lack of explanation, or is it plain indifference to the situation? Is it due to improper training, or poor discipline that causes men to "fumble the ball"?

The game of football, whether it is played on a sand lot, on a high school field, or in one of our great stadiums, teaches everyone—the spectators as well as the players—the fundamentals of protection, of offense, of defense, and of well coördinated team play. This war is a far greater game. It is the real "big game"—the game that all soldiers look forward to. And we must be certain that the bad habits that to date have characterized our practice sessions—maneuvers—are corrected immediately. Because carelessness, indifference, a moment of forgetfulness, a lapse of one second, will mean only one thing—useless, unnecessary casualties.

This is 1943 and another December 7 has passed. We must check and recheck to insure that in every field exercise every individual, group, and unit is realistic in all phases of their training. The bad habits that show in training, in maneuvers, will not kill Japs or Germans —they will bring about the useless sacrifice of American soldiers!

Examine the photographic record depicted here. Did the men realize that an enemy tank coming up the road could also shoot? Why weren't they protecting their weapon and themselves by using proper cover and concealment? Why didn't they move their prime mover far enough away from their weapon so that one enemy artillery shell could not blast the entire team out of the picture?

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What about the job of jamming up? This picture was taken 500 yards from the front line. What would one lone strafing plane do to this entire column? We have read and reread about enemy and allied convoys and trains being wiped out because of close columns, but here is an invitation to just such disaster.

— And What's W

What caused the commander of this scout car to park his vehicle near a conspicuous landmark—an oil well? Units detrucking, bivouacking, and assembling around conspicuous terrain features would make an easy mark for hostile artillery.

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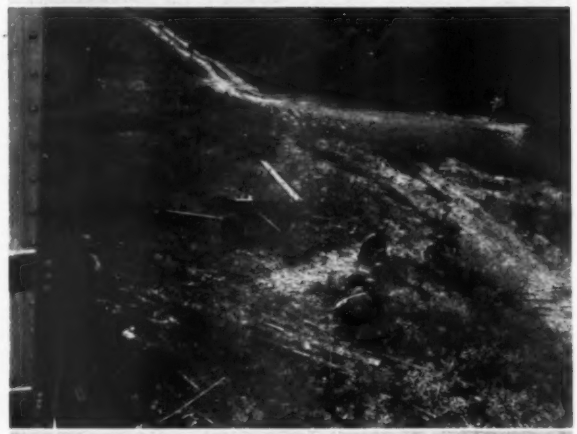

Here was a common occurrence during maneuvers when the action was a short distance away. An observer noted that this disposition was maintained, unchanged, for four days. Why did this happen? Was the junior officer or noncommissioned officer in charge unconcerned with this unimportant bridgehead protection for four days?

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This group of uncamouflaged vehicles closely grouped is the fault of someone. Are these men afraid of the chiggers and ticks that are waiting in the woods behind? Are chiggers and ticks more difficult to face than the real bullets, bombs, and shells that certainly would fall on this C.P.?

☆ ☆ ☆

What about this artistic job of camouflage? The men have concealed the truck but certainly have failed to camouflage the trailer. A job partly or carelessly done is an invitation to disaster!

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t's Wrong Here?

The three rifles leaning against this bridge may be booby traps. Doubt it? Maybe the men are just plain boobs and preferred a swim in the water beneath rather than carry out their orders. Three Jap snipers or three German snipers could learn to handle our Garand M1 Rifle soon after they found these gifts.

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Did this machine gunner want to make it easy for the enemy? What useful purpose did he serve, other than an easy target either to a hostile plane or sniper? A sleeper—hardly an alert American soldier.

☆ ☆ ☆

Why has this man been allowed to keep the cover on his .50 caliber machine gun while his unit was engaged in combat up the road a few hundred yards? Did he think that he could uncover the machine gun, load it, and mow down the enemy if he had to go into action in a short time?

☆ ☆ ☆

Has this antitank gun crew been properly instructed as to where to place their vehicle after unlimbering the gun? Have they been instructed to keep down—to keep busy—to remain everlastingly alert? In combat one moment of carelessness will mean useless prisoners or casualties and a captured or destroyed gun.

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Identification of Armored Vehicles

By Captain Stanley Armstrong, F.A.*

AMONG the subjects that the Automotive Department of the Tank Destroyer School has to teach is a fifteen hour course in tank and armored vehicle identification. Every student who passes through the school has to take this course.

The purpose, as the Tank Destroyer motto reads, is to "Seek, Strike, and Destroy" the enemy's tanks and armored vehicles. The hours spent on gun drill are of little avail if the gunner is unable to tell an enemy from a friendly vehicle. The moment spent in hesitation may give the enemy the first shot.

There are three field manuals of value as a beginning in armored vehicle identification—F.M. 30-40, which deals with U.S. Armored Vehicles; F.M. 30-41 on British Armored Vehicles and F.M. 30-42 on Armored Vehicles of Germany, Japan, Russia, Italy and France. These manuals are not quite up to date, since new models have been produced by all countries since their publication. The manual on U. S. vehicles lacks, for obvious reasons, the specifications and characteristics of the pictured vehicles. These manuals present a start, but they do not contain anything definite on the identification of armored vehicles as a subject.

There are two training films on armored vehicles—TF 11-382 (Know Your Enemy—45 minutes running time) which deals with German vehicles, and TF 11-383 (Friend or Foe—60 minutes running time) which covers the British vehicles.

The film pertaining to the German vehicles does not stick to vehicle identification but includes, also, information on the guns and other equipment of the German army. TF 11-383 covers the British armored vehicles very well, although some of the types shown are now obsolete or outmoded.

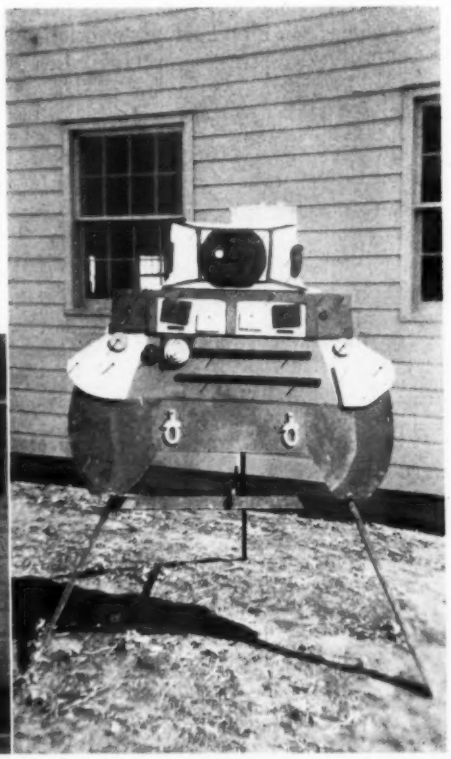
Following is a tentative outline and break-down of the course:

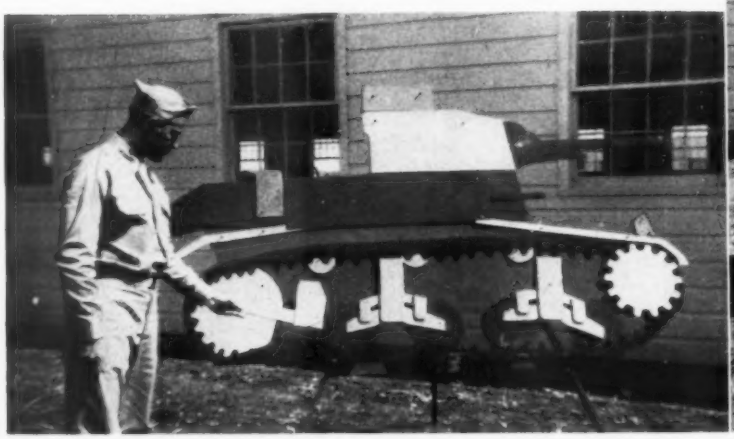
1. Brief history of armored vehicle development, and nomenclature of the main parts of an armored vehicle—especially tanks. 1 hour.

2. Discussion of the general characteristics, visible features, operation and maneuver characteristics, and characteristic sounds of armored vehicles.

3. Discussion of the U. S. armored vehicles in which differences and characteristics are presented with the aid of a balopticon projector and pictures from F.M. 30-40 and clippings from magazines and newspapers. 2 hours.

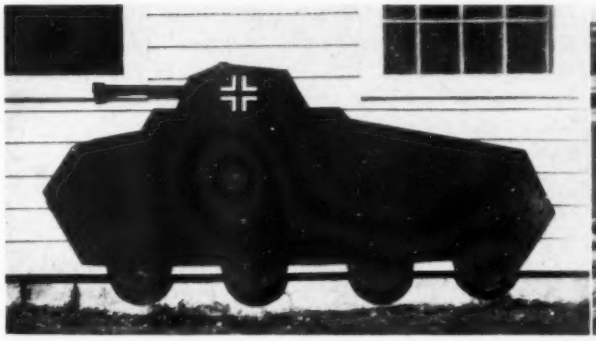
4. Discussion of the British armored vehicles presented in the same manner as in number 3 above. 1 hour.



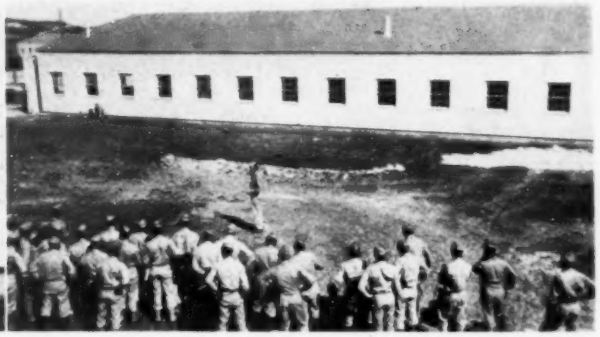


Effective Tank cut-outs are made from plywood, cardboard and linoleum.

*Automotive Department, Tank Destroyer School.



Tank silhouettes are made half the size of the real vehicle.



The 45-yard track is curved so that the student gets a side, front and rear view of the model as it passes by.

5. Showing of TF 11-383 on British vehicles. 1 hour.

6. Discussion of the Russian and French armored vehicles. 1 hour.

7. Discussion of the Italian and Japanese armored vehicles. 1 hour.

8. Discussion of the German armored vehicles. 1 hour.

9. Showing of TF 11-382 on German vehicles. 1 hour.

10. A four hour period—two hours of which are spent viewing small scale models and filling out a mimeographed characteristic key chart on each vehicle; the remaining two hours are spent outdoors viewing the models and silhouettes as they move along a track. 4 hours.

11. Graded Test. 1 hour.

For the course on the history of armored vehicle development, first the encyclopedias of the local library were scoured and this information consolidated with that obtained from "The Fighting Tanks Since 1916" —Jones, Rarey, Icks (a good book which will give background to any tank "identificationist"). Balopticon slides of selected prints are used in conjunction with the lecture.

It is important that the student have a knowledge of the nomenclature of the more common parts found on armored vehicles—especially tanks. So a side and front view of our M3 light tank were cut out of plywood. With these as the foundations, the tank progressively takes shape before the eyes of the students as the colored, cut-out parts are placed in their proper location. The parts are named, as the lecture progresses, either by the instructor or by a member of the class. Bolts in the foundation and holes in the parts make the latter "stay put."

The basis for the hour on general characteristics was found in Section I, paragraph 5, FM 30-40. This lists the characteristic visible features, and mentions the operation and maneuver characteristics and the characteristic sounds. Using this list and adding others to it, we used the balopticon projector again to point out the general visible characteristics.

During this same period it was decided to show briefly the training aids or sources the student has available to put on a like course when he returns to his unit.

The training aids that we show are listed below:

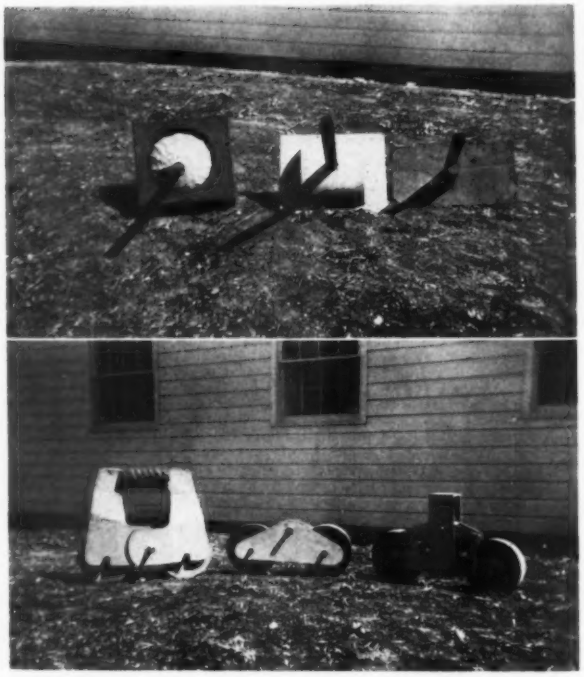
1. Linoleum or wood cuts.
2. Paper silhouettes and stencils.
3. Newspaper and magazine clippings.
4. Drawings and paintings.
5. Government charts.
6. Lithographs.
7. Reports of foreign observers.
8. Wooden silhouettes.
9. Mock-ups.
10. Small scale models.

Linoleum or wood cuts are very easy to make. Scrap pieces of linoleum can be had for the asking at any furniture or linoleum store. A silhouette of a vehicle is drawn on the linoleum, the portions not wanted are cut and gouged out, and when completed the linoleum is left with only the silhouette. It is then an easy matter to cover the surface with regular stamp pad ink and to make copies by stamping the cut on paper. The silhouette for a desired vehicle can be obtained from the listed field manuals or from pictures and can be "boosted" to the size desired.

Paper silhouettes cut out of colored paper and placed on contrasting colored paper prove a cheap but effective means of putting across a course.

A somewhat different silhouette can be made by using the above type silhouette as a stencil and spraying it with ink or paint. We made a very neat little "spray-gun" by filling a perfume atomizer with ink. When the ink is dry, the cut-out silhouette is removed, and its pattern is left on the object sprayed.

Newspaper and magazine clippings of vehicles can be collected and used in giving the course or can be pasted in scrapbooks according to nationality or they can be mounted on boards. All members of a unit can collect and look for pictures. They will find themselves, after a few hours of instruction in the course, trying to identify or recognize a pictured vehicle before reading the caption under it. We obtained some very excellent pictures by writing to some of the commercial photo agencies.



The various types of gun mountings are made very easily from some old mailing tubes and cardboard boxes.

Drawings can be made by some of the more talented members of the unit. By the use of a little color some very artistic and colorful drawings can be made and placed to good advantage in dayrooms or the mess halls. It is not necessary to have Leonardo da Vincis to accomplish this.

The Government Printing Office in Washington, D. C. puts out two charts (1941 -0-200667) each entitled

"Don't Fire on American Tanks."

One of the charts shows our own, allied and enemy light tanks. The other chart deals with the medium tanks. Again, these charts have become outmoded, as new models have appeared since they were printed.

The Corps Area Engineer may be able to furnish lithographs of the vehicles appearing in the field manuals. We obtained some 2′ x 3′ lithographs in this manner on the U. S. vehicles. These lithographs can be used in the event a balopticon is not available for use and can also be hung in dayrooms or points of assembly.

Reports of foreign observers very frequently contain information which will prove of value in the course. If nothing else they keep you posted on the various types of vehicles being used by the warring nations.

The wooden silhouettes can be made of plywood, tin, scrap wood, or similar material. They can be made to any desired size by "blowing" up the desired vehicle as pictured in the Field Manuals listed, with the balopticon, and tracing the projection directly on the material it is to be made from. All of our silhouettes are made half the size of the real vehicle. They can be placed to advantage by the mess-halls, the Post Exchange and the like. We place some of ours near the entrance to the mess halls and change models every two or three days. The silhouette is either named or some sort of distinguishing mark placed on it.

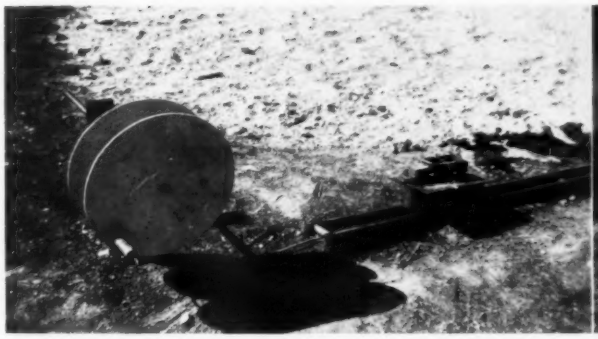
The different kinds of suspension systems or linkage used by the various countries can be made in a like manner from old cardboard and scrap lumber. A little paint adds color and helps to preserve the mock-up.

If you desire—you can build actual size mock-ups of the vehicles. These can be made so that they can be placed on vehicles for mobility or made only for the purpose of display in prominent places. Again—scrap lumber, tin and cardboard will serve the trick.

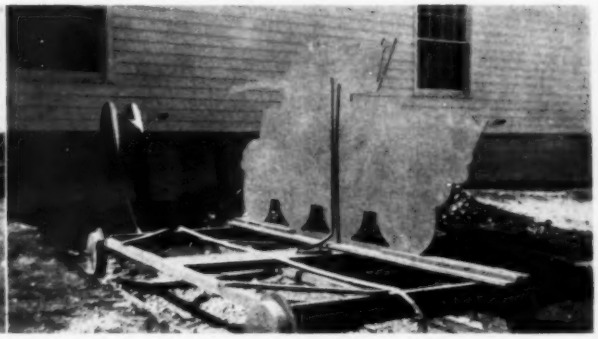
Last, but not least, are small scale models which can be built. We made our first ones out of old cigar boxes and thread spools with the aid of a coping saw, a pocket knife, a hammer and glue. Our first models were made entirely from the few pictures we may have had on the vehicle but, surprisingly enough, they are fairly accurate and serve our purpose. The models do not necessarily have to be made out of wood. The Tactics Department, for example, at Fort Knox, Kentucky, has cast some of the models. Our latest models are made on a scale 1:16. All of the units have a few hand tools and some even have power tools. With a little time and ingenuity these models can be made. Once they are made, they can be used time and time again for review or for new instruction.

The two hours on United States armored vehicles

Once made, miniatures can be used again and again.



The models are placed on a flat car which is pulled along the track by means of ropes fastened to the model at one end and to a windlass at the other.



A windlass and an operator are employed at each so that the silhouettes can be moved in either direction on the track.

are divided into one hour of conference and a one hour period during which the small scale models are studied. During the hour conference, the balopticon is used to project pictures of U. S. vehicles and the characteristic features of each model pointed out. (In regard to the pictures used in the balopticon—it has been found advisable to mount the pictures on thin cardboard or Bristol board. They withstand wear better and are not affected by the blower in the machine.) The second hour is devoted to a close hand view of the small models. The class is divided into groups so that not more than ten students are placed at a table which has a model on a turn-table in the center. The students have five minutes to study each model before getting a different one. During this time, they are required to fill out a mimeographed key characteristic chart on the vehicle—the purpose of which is to make the student look for the salient items which will aid in recognition—such as the type of suspension, turret, location of guns, etc.

The remaining conference periods on the British, Russian, French, Italian, Japanese and German armored vehicles is given in the same manner as the conference on the United States' vehicles. The two training films are given at the time shown in the outline.

The four hour period amounts to a review of all of the vehicles covered. Two hours of it are spent studying the small scale models and filling out the key characteristic charts as was done when the United States' vehicles were studied. The last two hours of the period are spent outdoors viewing the models and the silhouettes as they move along. We have built a 45-yard-long track out of wood which we use to run our models on. It is curved so that the student gets a side, front and rear view of the model as it passes by.

An operator, a windlass, and half the models at each end of the track enable us to run the models in both directions.

Actual size-appearance of the vehicle is accomplished by forming the students some distance away from the track. For example, a model built on the scale 1-16 would give the same impression to the observer 62 yards away as the actual vehicle would at 1000 yards away. A member of the class is called on to recognize the model as it travels along and to give the class his reasons for recognizing it as such. Large classes can be held at the same time with this method and the students find it extremely interesting.

We use much the same procedure with our half size silhouettes. In this case the track has to be much wider and the flat-car much larger. An old piece of pipe fixed vertically on the car gives support to the silhouette and prevents it from falling or blowing off.

The graded test given over the subject does not require the student to give model number or even the country to which a particular vehicle belongs. It is conducted by passing out unnamed, unnumbered pictures of vehicles belonging to all nations so that each student has a picture with which to start. The student is allowed to study the pictures for 15 seconds. During this time he is required to check on the test paper whether he would or would not fire on the vehicle in question. At a given signal the pictures are rotated every 15 seconds so that every student eventually sees all of them and checks the proper column on his test paper.

The subject is one which is definitely important. It offers unlimited possibilities. There are always new models to be made, new ideas to be worked out and the field is still new and ready for further developments.

Another article of particular interest to tank destroyer units will appear in the March-April issue of The Cavalry Journal.

HORSE BREEDING*

By Colonel Emiliano Fernandez Salaza, Cavalry, Spanish Army

THE select production of horses and mules in a nation is of manifest importance for the national economy and especially for its defense and its agriculture. That is the reason why, although with distinct modifications, all governments supervise this activity through official organizations, which indicate with uniform doctrine the indispensable directorate for the best efficiency in its development and improvement.

The natural aspiration of the stud and horse-breeding farms of the government is to obtain the best products of races recognized as improved with guaranteed pedigree, racial characteristics and excellent general conformation which, selected by tests, can be expected to be good for breeding.

It is impossible to expect so difficult a mission of the private stables in general which do not have at hand the technical personnel nor the economic resources which the government can count on, but it is obligatory that they aspire to make their breeding and production desirably efficient.

Selection and Appraisal of Breeders

The basis of all improvement in animals in general is to use the best breeders, and those of characteristics adequate for the use and service to which their descendents are destined.

As to the equine species specifically, it is indisputable that it would never be sufficient to qualify a presumed breeder on his pedigree, nor individuality, if his physiological development is not previously guaranteed by a test as adequate to his race or aptitude.

Thus, the pure English blood was attained not only by the purification of its ancestors, but also by the studied mating of the same; the care with which the animal was attended in his food, exercise and hygiene from the time of its birth; and finally, by the selection by test on the race tracks.

The traditional Arab owes his fame to the guarantee of purity of race demanded of the breeders, to the work exacted of them, proof of his agility, sobriety and resistance to fatigue, and also to the pastures and climate peculiar to the geographic area where it originated.

The equine species with characteristics of aptitude for draught, (recognized in Spain as of greater utility for agricultural service and horse-power traction in general) are known to have been obtained through cross-breeding and mixed breeding effected, under the influence of a favorable medium, climate and pasture, by a careful selection of the breeders in point of view of characteristics of general conformation appropriate and proved to be transmissible to its descendants. This procedure has formed families of well defined and uniform characteristics. Qualified as were the breeders in function of the quality of their descendance in point of fixed desirable characteristics, it was practicable to begin the edition of pedigree books with guarantees of efficacy.

We are obliged to follow such an example, not only for its effect on the national production of draught horses of the agricultural artillery type, but also of male jackasses in the known varieties such as Catalan, Leonesazamorana or Andalusian (whose utility and firmness of racial characteristics are manifest in determined territories of our peninsula).

In short (well known as the quality of a breeder's pedigree may be) it is undoubtedly the note which deserves higher coefficient for its proof, as is also its degree of fertility.

The castration of horses of bad characteristics, defective conformation, or with transmissible defects is inevitable, because their utilization for breeding purposes is very harmful for the development of horse breeding.

Mating

The conformation and characteristics of the mare in regard to weight, profile, proportions, energy and temperament should be in accord with those of the stallion. When there is antagonism between them, it goes far toward making the offspring a disharmonic animal indisposed to give the desirable efficiency of work.

It is a manifest error to suppose that mating a stallion possessing a certain failing through defect, with a mare which has the same failing through excess, will result in neutralizing the failings in the offspring.

The conformation of the pelvis in the mare is of the greatest importance, because a great number of dystocial or abnormal parturitions are caused by its small dimensions.

In the higher species of the animal kingdom there can be no fecundation without ovulation. It is recognized that as regards the mare and the she-ass the duration of its true heat in general does not exceed eight days, and that ovulation takes place days after the apparition of the heat.

It is not wise, therefore, to present the mare to the stallion at the appearance of the heat. Experiments performed have demonstrated that the greater percentage of fertilized mares have resulted on the fourth or fifth day.

The mare *customarily* receives the stallion on the ninth day of parturition. The period best suited to the

*Translated from *Ejercito* (Spain) for The Cavalry Journal.

success of fecundation is therefore from then up to the fifteenth day.

The mares dedicated to reproduction should be the object of special care during pregnancy. The period of gestation is approximately eleven months and ten days.

The most common causes of abortion are blows, inadequate food, such as pastures covered with dew (especially the artificial pasture grounds and alfalfa fields), excessive work, and sicknesses and infections. Among the sicknesses is the very dangerous durina, or disease of coition which causes so many ravages because of delay in proper diagnosis.

Fecundity and quality of pedigree, together with her morphological and racial characteristics, are the determinants for judging the deserved mare.

The methods of reproduction are:

a. By *consanguinity* which is that obtained by the mating of breeders of the same family.

b. By *selection,* mating of individuals of the same race.

c. By *crossing,* mating of individuals of different races. The improving one is called crosser; the one to be improved is called crossed; the resulting product is called crossed or hybrid.

d. By *interbreeding,* which is the mating among themselves of the individuals resulting from crossbreeding.

e. By *hybridation,* which is the sexual union of breeders of the same genus, but different species; the products obtained from hybridation are in the equine species infecund except for abnormalities.

In the animal or vegetable species in general, the characteristic of hybrids can be absolute infecundity, bilateral or unilateral; that is to say, they can be impotent or digenesic. In this case the female hybrids can be mated with males of one of the lines from which it is descended, and give birth to fecund offspring capable of reproduction "inter se" without being able to hope that such offspring will have characteristics of conformation both uniform and peculiar to the first mating. For this reason this method of reproduction has interest only in the utilitarian aspect and not in the zootechnic aspect.

We know that consanguinity is the reproduction of living beings brought about within very narrow limits of relationship.

Zootechnic authority Sanson expressed his judgment by saying, "Consanguinity raises heredity to its highest degree of power." It is manifest that if sexual divergences which neutralize the hereditary potency of the breeders are eliminated, the result will be the convergence of the action of said powers and the accumulation in the product itself of the bad as well as the good qualities of the parents; and as they cannot be exempt from any defect, it is necessary to take that into consideration.

Example of the highest degree of consanguinity that we have is that of plants which reproduce by self-pollenization, and in them degeneration is manifest in the course of a few generations. This is indicated by *gradual debilitation, smaller production of seeds, and greater susceptibility to diseases* whose damage grows until the fifth generation and establishes itself thereafter. Experience has shown that if during consanguineous reproduction a crossing is made with an individual free from the degenerate forms, the descendants will return to the normal state of the original forms.

The above refers to general cases, for it is known that there exist species *immune* to *consanguinity.*

In any case we believe that the horse breeder can continue to allow consanguineous but not incestuous mating so long as there does not appear in the offspring any characteristic which would make it compare unfavorably. Then it is obligatory to refresh the blood, or better said, renew the blood by using a breeder of separate family, although of equal race, if this method of reproduction is desired.

It is known that the original stock of pure English blood were the *Byerley* (Turkish), *Darley* and *Godolphin* (Arab) horses, imported to England; the first, in the 16th century, and the others in the years 1712 and 1731 respectively. Stallions were crossed with native mares and thus also with their female offspring. The system of consanguinity was followed on the basis of a careful selection until the fourth generation. Later, the advantages of consanguinity having been obtained, in order to avoid the serious difficulties of the very near and repeated cansanguinity, various families were formed by using breeders of a near stock and by pursuing the unification of characteristics without using narrow consanguineous unions.

The examples cited were ancestors on the paternal side of the present *race horses* and direct ancestors respectively of *King Herod, Eclipse* and *Matchem,* heads of the famous *Studbook* (genealogical book of the *thoroughbred* race) the first volume of which appeared in 1808.

Eclipse, whose exceptional quality was universally recognized, was the son of *Spiletta,* daughter of *Regulus* and granddaughter of *Godolphin.*

Herod was also incestuous and to him is attributed the exceptional quality of his daughters.

Concerning the mares, historians disagree. Some attribute the most likely origin of pure English blood as the *royal mares* of King Charles II (1660).

Reproduction by Selection or Election

Reproduction can be *conservative* or *progressive* or *economic.* The names are descriptive of the characteristics of each. It should be kept in mind that the qualities more and more indispensable for a saddle horse destined for the mounting of the cavalry are those of speed, sobriety, resistance to fatigue, even temper, and good character.

The method of reproduction by selection consists of choosing and using those breeders endowed with the most perfect conformation in relation to the character-

istics peculiar to their race, provided that they have proved their capacity for adaptation to the territory or region in which they must produce and breed. The methodic and continuous selection, which is undoubtedly the surest method of improvement, suffers the inconvenience of being slower in its results than that of crossbreeding and mixed breeding; but it avoids the risks of other nature inherent to acclimatization and probable lack of harmony and uniformity of type in the offspring.

Naturally, although the utilization of the best breeders is necessary to the development and improvement of horsebreeding, it would not be sufficient unless the offspring are subjected in the years of their growth and development to an adequate diet, exercise and hygiene. As happens in the vegetable species, the selected seed will degenerate ostensibly if it is deposited in soil of incomplete composition in which the plant cannot avail itself of the elements indispensable to its nutrition and development.

Laws of Heredity

We shall confine ourselves in these lines to giving a brief note of names and refer to normal heredity without including pathology. They are: preponderant; bilateral; atavistic; homocron (characteristics which appear in the offspring at the age at which they are manifested in the parents); throw-back (which appears in the first age to the parents, and then, in the adult, to the indigenous); homotópica (detail or trait which transmits itself to the descendant in the identical region of the body); and heterotopica (when such an item is transmitted but in a different part of the body).

Finally we will point out the influence of determined breeders for the procreation of offspring of their sex and others for the transmission of color or characteristics of their coat.

Diet of the Stallion

During the time of fecundation, diet must be clean and abundant with a base of barley, oats, bran and hay, with preference given to natural pastures over alfalfa or clover. The fodder will be given in very small quantity and not to all the horses; and also, with great prudence, beans. Of manifest convenience are hay and bran with meal, and in certain cases hot feed, or *mash* made as follows: 200 grams of straw, 500 grams barley, 150 grams of bran of flaxseed, 80 grams of barley meal and 13 grams of salt. All of these substances are put in a wooden pail in the order of their greater specific gravity. Then is added boiling water to cover them. Cover with a cloth and, after letting it cool for three or four hours, serve it lukewarm.

This *mash* or hot feed—so beneficial to sick horses, those without appetite, or those that are undernourished or have bad digestion—should be given in place of the night feed once a week, with care not to exceed in the proportion of flaxseed because of its weakening effects.

In general, there can be used as base for rationing a stallion of medium weight during the time of fecundation that of 6 to 7 kilos of barley and 11 of straw. Included in the latter is the amount necessary for bedding. To avoid the difficulties accompanying monotonous ration, it is advised that prudent changes be made in the food diet and that rational substitutions be effected with due consideration, of course, for the nutritive value of those administered.

A model ration can be that composed of 3 kilos of barley, plus 2 of oats, 6 of hay, 4 of straw and 800 grams of meal in hay with bran.

The barley given must not have been recently harvested and the weight must not be less than 52 to 54 kilos per hectoliter. As to the oats, it would be acceptable with 4 kilos less weight per hectoliter.

Water should be the object of extreme precaution; avoid the use of public drinking troughs which do not show extreme cleanliness.

Diet of the Offspring

All efforts in behalf of the improvement of the horse breeds would be fruitless, if adequate rationing in quantity and quality is not accorded the offspring *exactly* in the age of their growth and development. To show its importance, some expert said, "Half of zootechnics is in the bin." This does not mean that the other half, no less important, which are the laws of heredity, are of inevitable fulfilment.

Exercise

Except in the pure blood, to which the male as well as the female must credit his aptitude in the hippodrome, in the other races or equine varieties the proof of aptitude (work) is different. It is necessary to have the proof before using the horses for breeders. The horse destined for this function of breeding should, outside the time of stables, accomplish work appropriate to his race and aptitude, for it is known that, "Vice is the sequel to idleness," and that, "The function makes the organ." Proof of this is the fact that if a horse of a breed adapted for draught is used only for saddle and in work requiring speed, his muscle stretches with detriment to its thickness, with the consequent modification of his form in general; whereas, if a saddle horse is used for drayage or cartage, the muscle shortens and increases in thickness modifying its elasticity and, in short, also the characteristics of general conformation of the animal.

As for the pregnant mare, functional exercise is also indispensable to her. If she lives a life of liberty or pasture, her instinct and her necessities will oblige her to take the indispensable exercise; but if her life is that of the stable, it is necessary that the work she performs be directed and rational. Nonobservance is the cause of numerous abortions equally as much as carelessness in things pertaining to hygiene and diet.

As to the colts, if in their early stages the program for pregnant mares includes them, from the age of two or

three years, according as they are of races with aptitude for draught or saddle, they should be broken and subjected to work through which it will be practicable to bring about the physiological development of which the animal is capable. It should not be forgotten that it is the period of its life most suited to the result pursued and if he is to be destined for a breeder the test of *work* is of the utmost importance unless it be wise to use as breeder an animal which has not been well qualified in it.

In *The Ruling of the Center of Training* and *Selection of Breeders*, subsidiary of *The Directory of Horse Breeding*, a detailed account is given on how much the selection is affected by the test of the future breeders.

Hygiene

The private stables should bear in mind that the influence of the environment (climate, quarters, pastures, altitude and economic development) is manifest in the animal species which live and develop in one region. Corpulence, characteristics of conformation, temperament and sanitary disturbances show ostensible differences in different countries, and for that reason the variations or modifications appear in the fenotype of individuals produced in an environment and climate not similar to the geographic area which was the origin of their race or type.

Thus, for example, in a poor country with scanty pastures and poor in nutritive principals it is not wise to hope to produce, unless artificially, horses of great height and corpulence. One must be satisfied with obtaining sober, rustic well formed horses of smaller size.

If the influence of the environment is evident in the constitution of the animal it is unnecessary to point out the importance which the quarters in themselves have in regard to situation, size, orientation, ventilation, materials of construction, arrangement of windows, mangers, racks, etc., whether they be for adult animals of both sexes or for the breeding animals, as also the beds and situation of straw lofts, hay lofts, granaries, and finally the dung hills.

The mangers and racks must be subject to perfect cleanliness and disinfection.

Genealogical Books

The primary purpose of genealogical books is that the buyer of a breeder may count on the guarantee, not only of the individual characteristics which appear in the presence and action of the animal, but also on the purity of the race of its ancestors with proved capacity for transmission of the former to its descendants through which can be estimated its ability to reproduce them without irregular variations peculiar to the mating of half-breeds and still more in hybridation.

Fenotype is similarity in the external characteristics on the whole and appreciable biological capacity; its transmission is problematical.

The genotype includes all hereditary factors received by the individual from his ancestors.

The genotype has characteristics of permanence in the descendancy, and the fenotype can be similar among individuals of distinct genotype.

In short, the genotype is transmitted by heredity and the fenotype not always.

The National Horseman

The Cavalry School of 1943

THE CAVALRY SCHOOL is operating at a tempo geared to the demands and pace of the high-speed war effort.

To anyone who knew the Cavalry School in its pre-expansion days, the increase in subjects, the number of students and the variety of courses will be amazing. Production line methods have been applied to training officer and enlisted students to fill the complex needs of modern cavalry. Instruction is intensely practical and directed to what the student needs to know under field and combat conditions. Courses are constantly and frequently revised to incorporate last minute information and methods of combat. Current courses at the Cavalry School are set up under a block system in which a prescribed number of courses are conducted in 12-week cycles. In any given 12-week cycle, the following courses are conducted as of January 1943:

In order that all cavalry commanders and individuals of the cavalry branch may know the type of training available at the Cavalry School, a summary of the scope and subjects taught in each course are given in the following paragraphs:

1. *Squadron Commander and Staff Officer Course.* The purpose of this course is to provide for selected squadron commanders and regimental staff officers of the horse or mechanized cavalry intensive instruction in up to the minute doctrine, tactics, technique and procedure, and to emphasize training in command, staff, and logistics, with special reference to the horse or mechanized squadron.

2. *a. Officers' Basic Course (Horse Group).* During this course cavalry officers are given detailed training to qualify them as platoon leaders of horse Cavalry.

b. Officers' Basic Course (Mechanized Group). This course is designed to train Cavalry officers by an intensified program of instruction to qualify them as platoon leaders of mechanized cavalry.

3. Officers' Basic and Officer Candidate Courses are divided into two groups, the horse group and the mechanized group. Approximately seventy-five per cent of the officer candidate and basic officer students receive instruction in mechanized cavalry and twenty-five per cent in horse cavalry.

a. Officer Candidate Course (Horse Group). Established under the provisions of paragraph 20 *c* (2), MR-3-1 and MR-1-4, this course is conducted to qualify selected warrant officers and enlisted men of the Army of the United States as Second Lieutenants of Horse Cavalry.

b. Officer Candidate Course (Mechanized Group). Established likewise under the provisions of paragraph 20 c (2) MR-3-1 and MR-1-4, this course is designed to qualify selected warrant officers and enlisted men of the Army of the United States as Second Lieutenants of Mechanized Cavalry.

4. *Special New Division Officers' Course, 2d Cavalry Division.* This course is a special one designed to prepare brigade, regimental and squadron commanders and selected staff officers and troop commanders for the activation of the 2d Cavalry Division early in 1943.

5. *Officers' Motor Course.* This course is designed to qualify officers for duty as squadron or regimental motor officers and as instructors in the operation and maintenance of wheeled and half-track vehicles and tanks assigned to the cavalry.

6. *Officers' Communication Course.* The aim of this course is to qualify officers in those subjects which will fit them for duty as communications officers.

7. *Enlisted Motors Course.* This instruction is given to selected enlisted men in order to produce skilled mechanics, capable of performing and supervising second echelon maintenance on all cavalry type wheeled and half-track vehicles and tanks.

8. *Enlisted Communication Course.* Enlisted men are trained in all types of communications procedure in the field.

9. *Enlisted Horseshoers' Course.* This course is set up to turn out students trained to perform normal shoeing in their units. The course is divided into eight general phases as follows:

(1) Horseshoers' Tools and Their Uses.
(2) Fire and Heat.
(3) Working and Shaping Iron.
(4) Anatomy and Physiology of the Horse's Foot.
(5) Normal Shoeing.
(6) Corrective Shoeing.
(7) Shoeing Refractory Animals.
(8) The Operation of and Welding with the Acetylene Torch.

10. *Enlisted Saddlers' Course.* The Enlisted Saddlers' Course at the Cavalry School is conducted to turn out efficient saddlers, capable of repairing leather, felt, and canvas equipment in case of emergency, and to make articles of leather, felt, and canvas which are not items of issue normally needed in organizations. The Saddlers' School functions under the Department of Horsemanship.

The methods of instruction include both practical and classroom work. Great stress is laid upon the composition of a notebook for ready and practical reference in the student's future work. In it the student records daily the various measurements, specifications, and drawing that he will need to refer to in garrison or in the field.

The following phases of work are stressed:

(1) The correct use of Saddlers' tools.

(2) The correct and economical methods of repairing equipment.

(3) The correct modification of McClellan saddles, saddlebags, and stirrup straps.

(4) The care of leather equipment in the field and in garrison; also methods of cleaning and agents for cleaning and preserving.

(5) Methods of fitting saddles to horses of abnormal types and horses in a run-down condition.

(6) Characteristics of leathers, including the correct methods of cutting, fitting, and assembling new leather to old equipment to make it serviceable.

Material is provided for student shop practice (both textiles and leathers) by the Quartermaster under the Table of Basic Allowances.

In addition to enlisted students, both the Officer Candidate Classes and Basic Officers' Classes receive some instruction at the Saddlers' School. This consists chiefly of lectures and practical demonstrations of the agents for cleaning and preserving.

11. *Enlisted Armorers' Course.* The purpose of this course, as conducted by the Department of Weapons, is to train troop armorers thoroughly in the nomenclature, detailed disassembly and assembly, functioning, repair, and care of all cavalry weapons, and ammunition loading equipment, so that they may perform these duties efficiently with their units in the field.

Instruction by Departments

For the efficient conduct of training, the Cavalry School is organized into six Departments. The following résumé outlines the functions and type of instruction conducted by each Department:

Department of Horsemanship and Horsemastership

This department gives instruction to students of six of the eleven courses currently conducted by the Cavalry School. The training is pointed to preparing the student to perform his duties under field conditions.

It is divided into five principal phases as follows:

1. *Animal Management.* To teach the elementary anatomy of the horse, the basic principles of nutrition, the cause and prevention of animal disability, stable management and care of horses in the field, methods of transporting horses, and first aid treatment of common diseases.

2. *Horseshoeing.* To give a practical knowledge of normal and corrective shoeing, inspection for needs of shoeing and of newly shod horses; to instruct the student in the preparation of the foot and the securing of the shoe to the foot; to instruct the student in the use of acetylene welding equipment.

3. *Care and Preservation of Leather Equipment.* To impart a practical knowledge of the methods and means used in the caring for leather, the preservation of leather and the restoration of old leather.

4. *Pack Transportation.* To teach the student the fundamentals of the Phillips' Pack Saddle and its adjustment, including adjustment of pads, the selection of pack animals for suitability, and lashing of cargo loads.

5. *Horsemanship.* To train the student for mounted duties in campaign. To teach the correct principles of the military seat, and to instruct the student in conduct, control and maneuver of mounted units, and in the proper methods of marching and gaiting.

Department of Motors

The Department of Motors is divided into five sections: Department Headquarters, Supply Section, Automotive Section, Special Classes Section, and Tank Section.

The Headquarters and Supply Sections perform the usual duties of supervision, administration, and supply.

The Automotive Section conducts all instruction in

The weapons and ammunition go along. A cavalry troop can go at speed even in very rough country.

The officer candidate class rights an overturned vehicle.

wheeled vehicles, half-track vehicles, and motorcycles for the Officers' Motor Course and the Enlisted Motor Mechanics' Courses. Facilities are set up on a production-line basis to instruct enlisted classes and officer classes in 12-week cycles.

The Special Classes Section conducts all motor instruction for the Officer Candidate, Basic, New Division, and Squadron Commander and Staff Officer Classes. Each of these classes is given approximately fifty hours of motor instruction, except the New Division Classes, which are given sixteen hours, and Horse Classes, which are given six hours. In each 12-week cycle, instruction is given to Officer Candidate Classes, Basic Classes and a Squadron Commander and Staff Officer Class. Thus far one New Division Class has been scheduled. Each of the Special Classes is given a short course in the mechanical functioning, operation, and maintenance of military motor vehicles. Stress is placed upon preventive maintenance and the supervisory duties of officers of mechanized units. The limited time available does not permit giving these students sufficient technical training to qualify them for duty as motor officers.

Commissioned and enlisted instructors in the Automotive Section and the Special Classes Section are graduates of motor courses at one or more of the following schools: The Cavalry School, The Armored Force School, The Infantry School, The Field Artillery School, The Ordnance Schools at Holabird and Normoyle, The David Ranken School of Mechanical Trades, and various service schools conducted by vehicle manufacturers. Every effort is made to incorporate the best instructional ideas of all of these schools into courses given at the Cavalry School and to standardize instruction with that given at other ground force service schools.

The Tank Section, which is currently in the process of inauguration, will be responsible for all training in the mechanical functioning, operation, and maintenance of full track-laying cavalry type vehicles. Classes enrolled in the Tank Maintenance Course will be made up of selected graduates of the Officers' Motor and Enlisted Motor Mechanics' Courses. They will be given a four-week course. Instructors for this course, in addition to being graduates of either the Officers' Motor or Enlisted Motor Mechanics' Course at the Cavalry School, are graduates of the Tank Maintenance Course at the Armored Force School.

Department of Communication

The Department of Communication has a communications class starting each week and a class graduating

each week. Classes are in attendance at all times: All instructors in this department have had previous communications experience and every opportunity is taken to present the latest information on the practical uses of military communications which may be obtained. Both the Officers' and the Enlisted Communication Courses are based *on approximately 70% practical work and 30% theoretical* instruction.

The Officers' classes receive basic communications instruction, which covers communications, security, air-ground communication, cryptography, message center operations, message writing, and organization of communications. Courses in Radio Procedure, Electricity and Magnetism, Radio Theory and Field Maintenance of Equipment are a combination of theory and practice. Many hours are spent on practical field operation of radio equipment and on command post exercises built upon the use of communications. Code Practice for the officers trains them to the extent that they are able to instruct other operating personnel, but does not aim at making expert field operators of the officers themselves. An intensive course in the duties of a communications officer gives them instruction in the command and staff duties of their assignment, signal supply, preparation of signal operating instructions, methods of instructing new cadres, and other personnel in newly activated units. This with the required outside work, which includes preparing a typical field training exercise, a command post exercise, and an hour conference to be delivered, in theory at least, to the officers of a new regiment, qualifies them to be communications officers of any Cavalry element up to the division.

The enlisted men are trained to be field radio operators and communications specialists. They must qualify at a minimum speed of 16 words per minute in Code Practice although the usual class average is above this figure. They receive an intensive course in Radio Procedure and the Tuning and Adjustment of Radio Equipment. A course in electricity and magnetism and radio theory gives them the background necessary to perform minor maintenance duties. Their basic instruction includes communications security, safeguarding military information, cryptography, message center operations, and organization of communications, and air-ground communications. A great share of their time is spent on actual field operation of radio equipment, both mobile and immobile and in the performance of all types of communications duties on command post exercises.

While the aim of both courses is to make the student proficient at any assigned duties connected with communications, emphasis is placed on how to instruct the subjects as they, the students, are being taught. The officers, in addition, act as assistant instructors during their last few weeks in the course to give them actual teaching experience. The enlisted men, while trained primarily as field radio operators, are so instructed as to be able to assist their communications officers in giving instruction.

Students of an officer candidate class learning capabilities of cavalry type vehicle.

From reports of observers on recent maneuvers in all parts of the country, the cavalry communication personnel are living up to their mission; namely, "Get the information in and the orders out."

Department of Tactics

The Department of Tactics conducts instruction in five of the eleven courses regularly in residence at the School; i.e.:

Squadron Commanders and Staff Officers.
Officers' Basic Course, Horse.
Officers' Basic Course, Mechanized.
Officer Candidate Course, Horse.
Officer Candidate Course, Mechanized.

The first-named course covers intensively subjects pertaining to small cavalry units, and such instruction in tactics, command, staff and logistics as are applicable to squadrons and regiments of both mechanized and horse units. Among the subjects included are the organization of all cavalry units, their characteristics and missions; organization and characteristics of certain foreign armies; map and aerial photograph reading; estimate of the situation and terrain; combat orders; tactics and technique of the associated arms including air, infantry, field artillery, and engineers; instruction in umpiring; and map exercises, terrain rides, and field exercises that illustrate the squadron and regiment in the attack, defense, and on reconnaissance, security, and special missions.

The objective of the instruction given in the Officers' Basic Courses, Mechanized, is to qualify the student

Officers of a basic course (horse) dissect the feet of a horse in the animal management laboratory. Greater understanding of the anatomy and physiology of the horse makes for better horsemastership.

to command in the field each of the following types of platoons: reconnaissance, tank, and assault gun platoons of the Cavalry Regiment, Mechanized. This instruction includes map and aerial photograph reading, estimate of the situation and combat orders, instruction in the employment of the associated arms, and the principles of communication and staff functioning in the Cavalry Regiment, Mechanized. Also included is instruction in umpiring, street fighting, and dirty fighting.

Instruction in the Officers' Basic Course, Horse, is in general the same as that for the mechanized classes except that its purpose is to train leaders of the following types of platoons: rifle, machine gun, mortar, and reconnaissance, and antitank platoons of the Cavalry Regiment, Horse.

The instruction for Officer Candidate Courses is in general the same as that for the Officers' Basic Courses.

The instruction, generally, consists of conferences, illustrative problems, demonstrations, and exercises in the field in which the students actually function as members of the various organizations. Under the block system in operation at the school, the Tactics Department conducts instruction in the Basic and Officer Candidate Classes for approximately five weeks. For the Squadron Commander Course, instruction in tactics is practically continuous throughout the course,

The instruction is continually in the process of revision in order to enable the students to become familiar with the latest tactical methods employed in the present theaters of operation.

Department of Weapons

The Weapons Course at the Cavalry School has changed materially in the past few months. Basically, the instruction in methods of firing the weapons and in the functioning of the piece has not changed, but much has been added to the course to keep up with battle experience and to add realism to instruction. The greatest change in the past year has been the adding of small unit tactics to weapons instruction with emphasis on the employment, emplacement, and use of weapons in the squad, section, and platoon.

Instruction in new cavalry weapons, the M1 carbine, the 75mm Howitzer, and in rocket grenades, rifle grenades, and improvised grenades, has been added. Extremely practical instruction has recently been initiated, in village fighting, infiltration against automatic weapons fire (using live ammunition), and battle firing. An actual village has been constructed in which the students encounter the conditions peculiar to combat in towns and villages, and use live ammunition to overcome them.

Much construction and improvement of range facilities has been made recently. All firing of weapons, except known distance and landscape rifle firing, and 1,000 inch machine gun firing now takes place on the Magic School Range on the new reservation. Installations now include a field firing range, 1,000 inches and 500 yard moving target ranges, AA range, two blocks of buildings for village fighting, SMG-pistol-carbine range, quick firing range, dummy and live hand grenade courses, eight lane moving vehicle firing course, combat firing area for horse cavalry, and combat firing area for mechanized problems.

Officer candidates and basic officers receive identical instruction in weapons, while squadron commanders and staff officers, having fewer hours allotted, are given more demonstrations with emphasis on training aids and methods of training.

Great stress is placed on field firing and combat firing of each weapon. The combat firing is combined with instruction in small unit tactics. In mechanized classes, for example, six days are devoted to small unit tactics in which fire and movement of squads, sections, and platoons is stressed by actual work under combat conditions. Following this, one day is used to teach the employment, use, emplacement, and missions of the 81mm mortar; one day, the employment of the reconnaissance platoon reinforced with assault guns in delay; one day, the reconnaissance platoon reinforced with tanks and assault guns. This series of problems is culminated by a practical exercise in laying the various weapons to fire at night, and then firing after dark by using exploding targets to demonstrate the accuracy of the laying and firing of those weapons. Horse classes receive the same instruction and follow substantially the same sequence, but use tactical situations suitable to horse cavalry missions. Practice in control by students as leaders is stressed.

The new range facilities of the Cavalry School are

a model of compactness, with common impact areas for all types of weapons. The installation enables the maximum instruction and training with the minimum loss of time. Sections of a class may be given instruction in various areas of the range and be shifted without loss of time.

Department of General Instruction and Publications

In this department the aim is to turn out officers capable of conducting field instruction and training in a highly effective manner. A general summary of its instruction includes the following:

(1) *Orientation.* This class emphasizes to the student the general nature of training problems which will confront him and to introduce methods of presenting instruction.

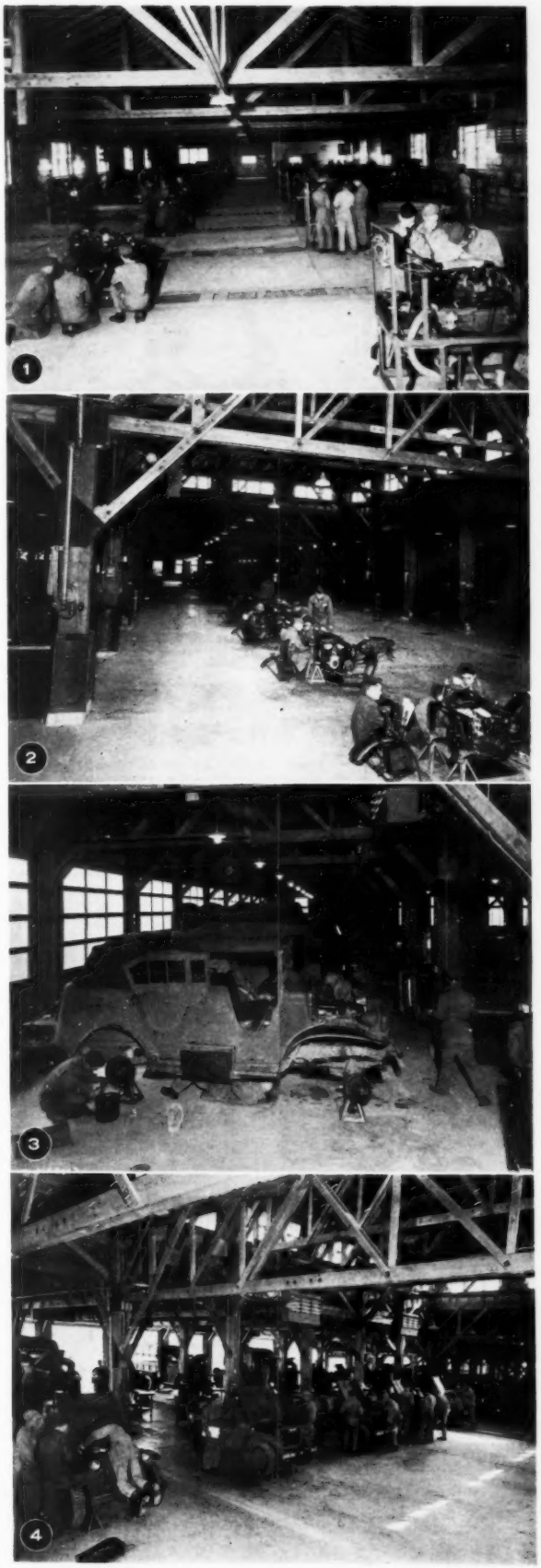
(2) *Military Courtesy and Customs of the Service.* Instruction is designed to acquaint the student with all pertinent regulations and indicate the standards required of all individuals and units.

(3) *Technique of Instructing.* This subject is continually emphasized throughout all instruction at the Cavalry School. Its purpose is to teach the student how to teach others, how to impart the knowledge he has acquired; how to plan, prepare, and give a period of instruction or training; and to demonstrate the preparation, application, and uses and effects of training films, film strips, and visual aids in training.

(4) *Troop Administration.* This covers the proper conducting of military correspondence, the use and preparation of daily troop reports; mess management (including nutrition, cooking, field messing, sanitation, rations and ration supply and accounting); supply, authorized supplies, how obtained; care and disposal; the administration of troop funds; to familiarize the student with the general nature of some of the problems of administration which will confront him on joining his organization.

(5) *Training Management.* This instruction is designed to teach a fundamental and useful conception of training management to include the functions of the leader, principles of training, the preparation and use of training programs, the preparation of a simple applicatory exercise, emphasizing methods and mechanics of instruction, methods of inspection, and a standard of proficiency.

(6) *Military Law and Justice.* The purpose of this instruction, based on the Manual of Courts Martial of 1928 and the Articles of War, is to emphasize the knowledge required by officers in regard to this phase of military life and to discuss troop punishment and pretrial procedure. Explanation is made of the great necessity for good leadership necessary to reduce the number of offenses in a command to a minimum.



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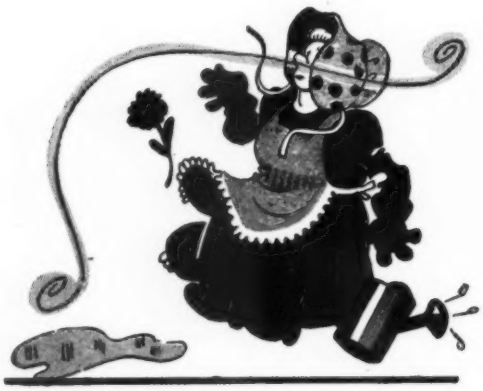
IT'S O.K. IF YOU FEEL BLUE,
BUT **TEAR GAS** STARTS
YOU SOBBING TOO.

CG

FATHER WAS PLEASED THAT SUNDAY MORN
TO NOTE THE AROMA OF FRESH-CUT CORN—
CRIED LITTLE WILLIE — TURNING GREEN—
"GRAB YOUR MASK, POP—
THAT'S **PHOSGENE!**"



M1

GRANNY SMELLED GERANIUM,
STARTED FEELING KINDA BUM,
THOUGHT SHE HAD A GARDEN BLIGHT,
WHAT SHE'D FOUND
WAS **LEWISITE**

HS

NEVER TAKE A CHANCE, MY FRIEND,
IF SOME GARLIC'S IN THE WIND.
DON'T THINK MUSSOLINI'S PASSED—
MAN — YOU'RE BEING
MUSTARD-GASSED!

Book Reviews

THE RED ARMY. By Michel Berchin and Eliahu Ben-Horin. W. W. Norton & Co., Inc. New York, 1942. 265 pp. $3.00.

At a time when the U.S.S.R. is again demonstrating its magnificent offensive spirit and power, it is fitting that a sober, non-partisan study of its army should appear. *The Red Army* provides such a study, and, in addition, reviews its development from the days when the Imperial Russian Army collapsed on the Eastern Front in 1917.

The authors trace the growth of the Red Army in size and power against the background of the Soviet Union's turbulent coming of age. During its two decades of existence it has been transformed from the ragged nucleus of an international revolutionary force into a tough, competent army for the defense of the homeland. Social theory has gradually been subordinated to the hard facts of the world as it is. "The Russian soldier is revolutionary today," say the authors, "in about the same sense as the French soldier at Valmy was revolutionary in 1793, or as the American soldier was at Princeton, or at Yorktown."

The Red Army has the world's strongest cavalry force and has freely combined therein the elements that compose modern cavalry. As Marshal Timoshenko says, "There is no conflict between horsepower and horses." There is evidence in this book that the Red Army horse cavalry would be even larger were it not for the decline in horse breeding (a consequence of the wholesale mechanization of the farms) and the fact that the Germans have occupied the territory which produced 48.8 per cent of the U.S.S.R's. horses.

This book adequately describes the development of all arms of the Red Army and concludes with a summary of the Russo-German war through last summer's campaigns.

L. B. C.

* * *

TORPEDO JUNCTION. By Robert J. Casey. Bobbs-Merrill, New York. 419 pp. $3.50.

Torpedo Junction is the Navy term for Pearl Harbor. Mr. Casey's book is the story of what happened to the Navy in the Pacific after Pearl Harbor. Aboard a heavy cruiser, he watched the Navy operate from the Marshall Islands through Wake, Marcus Island, the Coral Sea and Midway.

Starting out in an understandably pessimistic frame of mind Mr. Casey gives a blow-by-blow description of preparation, practice, dress rehearsals and finally action itself, until, after the victory at Midway, the last trace of gloom disappears, and he winds up his book with the optimistic statement that "the control of the Pacific may have passed to us as a result of it."

Necessarily, this is the tale of what one man saw from one ship, and therefore there are many tantalizing gaps in it. But what it lacks in completeness is more than made up by "local color" and human interest stories. The physical detail is excellent. This is one of the most readable of the current war books.

H. P. C.

REPORT FROM TOKYO. By Joseph C. Grew. Simon and Schuster, New York. 88 pp. Paper, $1.00. Cloth, $1.50.

Joseph C. Grew has had a long and interesting career as a diplomat. It is of particular interest that he was Counselor to the American Embassy in Berlin during the early part of the First World War. This equipped him with a sound knowledge of the German people, whom he graphically contrasts with the Japanese.

As American Ambassador to Japan from February, 1932, until the present war he was given ample opportunity to study the Japanese people. He is in an excellent position to judge the comparative attributes of our enemies, as few men are privileged to be.

Report from Tokyo is an account of the days before Pearl Harbor, of the character of the Japanese as a nation, and what the people have been doing to create this character over a period of time.

We are shown very clearly wherein we must correct our own faults if we are to succeed in conquering these people. We are told why we must conquer, why mere winning will not be enough.

This book should be required reading for every American, starting with students in the first year of high school.

E. S. D.

* * *

SUEZ TO SINGAPORE. By Cecil Brown. Random House, New York, 1942. 545 pp. $3.00.

This long personal history is the story of a conscientious war correspondent's attempt to tell of what he saw and the difficulties that beset him. About half of *Suez to Singapore* is a recital of events that the author witnessed from April, 1941, through March, 1942; and the rest describes in laborious detail the attempts of unsympathetic officials of the British Empire to douse his shining torch of truth.

Mr. Brown was extremely alive to the dangers of complacency in the face of skilled and ruthless enemies. Playing the always unpopular rôle of Cassandra, he went from one bastion of the Empire to another in the course of his journalistic duties.

As an American correspondent, Mr. Brown considered it his duty to arouse Americans to the dangers that they were facing. He wanted to make them realize that the power of the British would not be enough to stop the world-wide aggressions of the Axis. The British colonial authorities, all anxious to have their bailiwicks in good repute in far off London, were, perhaps naturally, averse to having Mr. Brown expose one inadequacy after another; and from this fact arose Mr. Brown's many battles with the censors. They are here recounted in rather too much detail.

Most of the author's time was spent in Singapore. He states that it was only a matter of weeks before the Japanese invasion that the British discovered that the rice fields were negotiable by Bren gun carriers. This belated discovery completely destroyed the road-bound foundation of their defensive tactics. They later lost a good many miles of

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northern Malaya before they learned further that the expression "impenetrable jungle" was not in the Japanese vocabulary.

Mr. Brown was on the *Repulse* when it and the *Prince of Wales* were sunk by Japanese land-based planes, and his description of that event is the high-spot of the book. This is one of the very best of the current bumper crop of war correspondents' books. L. B. C.

GUADALCANAL DIARY. By Richard Tregaskis. Random House, New York, 1943. 263 pp. $2.50.

As one of the two newspaper correspondents to accompany the U. S. Marines in their attack on the Solomon Islands, Mr. Tregaskis set foot on Guadalcanal when the first detachment landed on that desolate island. He stayed there for the first seven weeks of the occupation, and this book is his story of the start of our Southwest Pacific toe-hold campaign.

The occupation of Guadalcanal was a tough and dirty job, and base headquarters was never more than a mile or two from the outpost lines. The author's view of the Guadalcanal campaign was really a "fox-hole view"—and there is plenty of evidence in this book that the fox-hole is really the best vantage point.

Mr. Tregaskis repeatedly exposed his six-foot, seven-inch frame as a target in his effort to find out what was really going on, and his description of the battle for the Tenaru River alone justifies that considerable risk.

The story is one of fierce fighting, privations and hardships, and of the development under fire of a magnificent American fighting force.

Doubt and discouragement crept in as weeks passed with no reinforcement, and the Japs kept landing at night a few miles up the beach. But American courage and determination downed them and the reinforcements finally arrived. Mr. Tregaskis then retired to Hawaii to equip himself with some more size 14 shoes and to write this book. He is now back in the Solomons.

Quadalcanal Diary lacks the polish of some of Mr. Tregaskis' older colleagues' works, but it gives the feeling of the fighting on Guadalcanal, which is no mean praise. L. B. C.

HE'S IN THE ARMORED FORCE NOW. By Capt. Addison F. McGhee, Jr. McBride, New York. 256 pp. $2.50.

Captain A. B. McGhee has been in the Armored Force since its inception in 1940. From his abundant knowledge he has presented an exciting story of a group of typical trainees from the time that they begin as raw recruits until they are full fledged Armoraiders.

The book covers all branches of the Armored Force—tank corps, motorized infantry, engineers, reconnaissance battalion, artillery, supply, maintenance and medical battalion.

It should be part of the necessary education of every American to be familiar with the fundamentals of the branches of the armed services now engaged in this war. Books of this caliber are more than exciting reading; they are essential information.

The Signal Corps deserves special mention for their splendid pictures which bring to life this thrilling story. E. S. D.

BOMBS AWAY. By John Steinbeck. Viking Press, New York. 185 pp. $2.50.

John Steinbeck at the request and with the coöperation of the Army Air Force has garnered the material for this story of a bomber team, consisting of pilot, navigator, bombardier, crew chief, gunner and radio man.

Selecting six typical American boys, the author gives them imaginary backgrounds, outlines the requirements, details the training, and follows the progress of each man from civilian life to assignment with the team. Steinbeck then depicts the training of the crew as a unit until it is prepared for combat.

Great emphasis is laid on the ideal of unity and mutual coöperation essential in attaining successful completion of each mission by these courageous groups—an ideal which might well serve as a criterion upon which to found a real spirit of democratic accomplishment.

The author's style is well adapted to this type of writing. He has refrained from all personal observation or opinion and produced an account as clear cut and graphic as the very excellent photographs by John Swope which underscore the text.

This book is not a manual of instruction, but is an effort to give a better understanding of the caliber of men who are daily and nightly flying our bombers over Axis territory, what is required of them, and how they are trained. It will assist young men to decide whether or not they are fitted to become one of such a closely knit group. It will give families of men who are now participating in or are training for bomber combat a better understanding of what life their men are leading. It is quite probable that many army men will also find it both interesting and enlightening.

E. S. D.

* * *

THE WAR IN THE WEST. By Daniel Vilfroy. Military Service Publishing Co., Harrisburg, Pa. 163 pp. Map. $2.50.

Daniel Vilfroy, as a staff officer in the 2nd Division of the French Mechanized Cavalry, saw the psychological and military collapse of France. In *The War in the West* he discusses the traditional French strategy built on years of fighting over the same terrain. He points out how this static thinking allowed modern German tactitians to overwhelm the armies of Holland, Belgium, France and England in so short a time. He also presents the German strategy and tells why it was successful. No effort is made to underrate the lack of foresight in the French command nor does he attempt to justify it.

The latter part of the book deals with the "Essentials of Modern Warfare" with separate chapters given to the rôles of infantry, artillery, tanks and cavalry, and aviation. It is not to be expected that the student of military affairs will always agree with the theories advanced in this portion of the volume, but he can hardly fail to find much of interest.

While giving mechanized forces their due as an essential part of modern warfare the author does not fail to remind us that horse cavalry is still a very vital part of any army. He states, "In certain conditions of terrain, cut and wooded, it remains the only arm capable of reconnoitering."

This book should prove an excellent background for any study of the present war.

E. S. D.

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CRAZY HORSE. By Mari Sandoz. Alfred A. Knopf, New York. 428 pp. $3.50.

Maria Sandoz was peculiarly well fitted to write this swiftly moving biography of the man who inspired his people to deal Custer and the 7th Cavalry such a crushing defeat at the Little Big Horn. Her own life has been spent in the upper Niobrara river country. She was raised on tales of the Sioux Indians, many of them about Crazy Horse, Strange Man of the Oglalas. To this background she has added painstaking research and skilful writing.

Much has been written of Custer and his men, and books abound on the opening of the west from the white man's point of view. Little material has been available, however, by writers familiar with the Indian side of the question. Most of our information by Indian writers is too imaginary to be factual or too technical to be popular.

Mari Sandoz has produced a biography to fill the gap in that period of history which settled forever the position of the Indian tribes in relation to their white conquerors in the west. It is a magnificent epic of an extraordinary man.

Crazy Horse deserves to stand in any collection of books on Custer and his time, if for no other reason, because it gives a picture of the people with whom he fought, and the warrior who swept them into one last victory.

E. S. D.

WINGED MARS. (Vol. I.) THE GERMAN AIR WEAPON. 1870-1914. By John R. Cuneo. Military Service Publishing Co., Harrisburg, Pa. 338 pp. $2.50.

Complete in itself, this first volume of a history of air power endeavors to interpret current aerial warfare through the analysis of past mistakes. It deals primarily with the German air weapon, 1870-1914, but includes an outline of the growth of European air power generally. Excellent notes and thorough indexing give added value to the material.

The second volume will carry an account of air power through the campaigns of the first World War. Against the background of these two books will be built a history of the air weapon in this country. The complete set will undoubtedly be an exhaustive history of the use of airplanes as weapons in warfare.

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AIR COMBAT TRAINER. Lewis Instructor Games. New York. $2.00.

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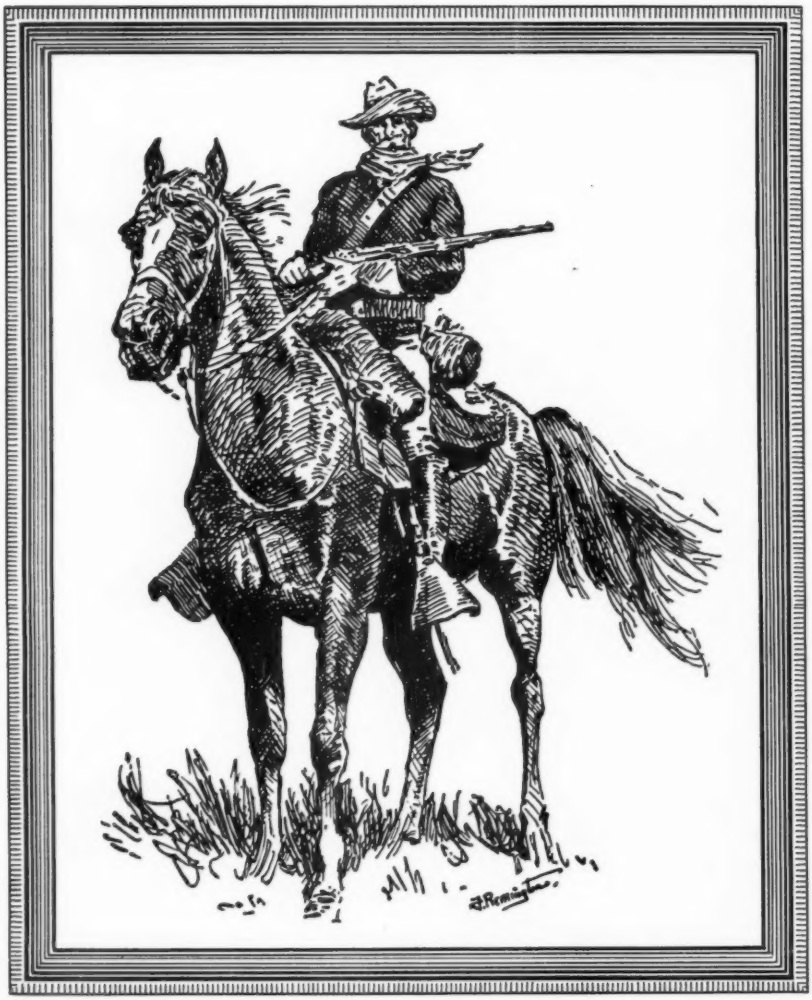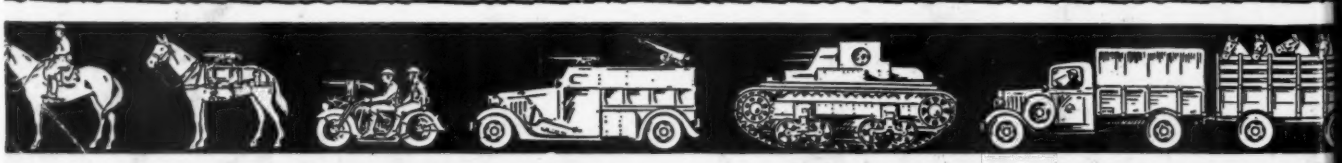
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